

BRITISH MUSEUM

A GUIDE TO  
THE ANTIQUITIES OF THE  
BRONZE AGE

IN THE DEPARTMENT OF BRITISH  
AND MEDIÆVAL ANTIQUITIES

SECOND EDITION

WITH 10 PLATES AND 195 ILLUSTRATIONS

PRINTED BY ORDER OF THE TRUSTEES

1920

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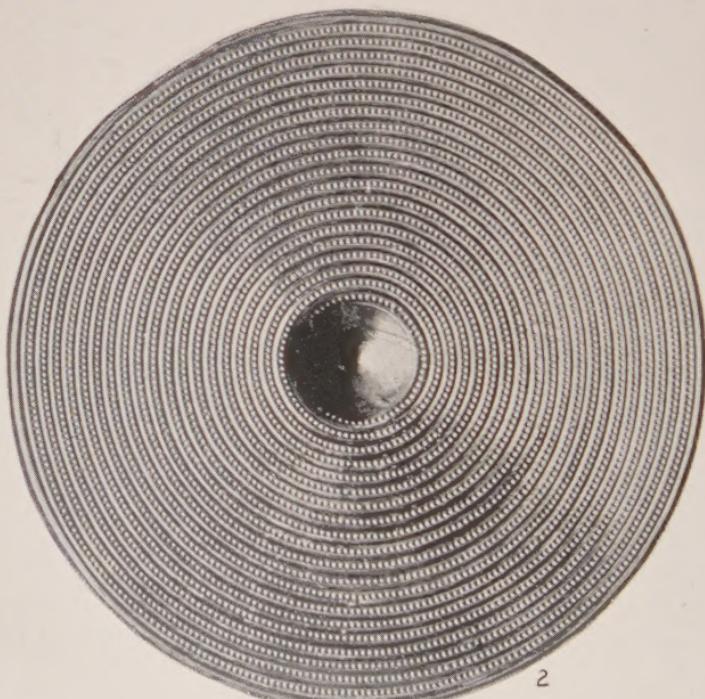


BRITISH MUSEUM  
BRONZE AGE GUIDE





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PLATE I. BRONZE BUCKLERS, THAMES AND WALES.  
(Cases 93, 98, *see* pp. 42, 43)

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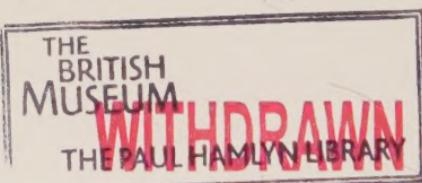
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## PREFACE TO SECOND EDITION

IN the sixteen years that have elapsed since the first edition, progress has been made in the archaeology of the Bronze Age both at home and abroad, and several alterations will be found in the present volume, mainly on account of the recent rearrangement of the collection. The classification is twofold—by locality and by type, and some overlapping is inevitable, but it is thought that evolution-series of the larger groups will be more useful than a strict adherence to provenance; and exhibits to this end have been arranged in the three table-cases nearest the main staircase. An index case of British pottery is also provided in the central Saloon, by way of introduction to the large exhibit in the Prehistoric Room.

The collection was enriched in 1909 by the late Mr. Pierpont Morgan's munificent gift of the bronzes collected by the late Canon Greenwell, and the Museum can now boast of a truly representative collection from the British Isles and Europe generally. Properly supervised excavation will no doubt bring more from the East; and authentic groups of specimens, such as those from individual burials, would do much to elucidate the chronology of finds in our own country. What has been done with regard to this period in France can be seen in the second volume of the *Manuel d'Archéologie* (1910), from the pen of Capt. Déchelette, who volunteered for service and was killed at the front in October, 1914.

Much that was formerly regarded as vaguely prehistoric is now seen to belong to well-ascertained stages in the development of the highest ancient civilizations, but the objects themselves belong more properly to the Egyptian and Assyrian or to the Greek and Roman Department. For this reason only

typical series of such remains can be shown in the Prehistoric Room, and the New World is omitted altogether (see *Guide to the American Antiquities*, 1912). Most of the antiquities here belong undoubtedly to the Bronze Age, but there must have been a considerable overlap at the beginning and end of the period. Reference is made to certain stone and other primitive implements that clearly survived into the age of metal, and a few specimens of the Hallstatt period may be included in this Guide, but most are exhibited in the Iron Age Gallery (see *Early Iron Age Guide*). The introduction of iron into this country is still an undated event.

In addition to those acknowledged in the first edition, the Trustees are indebted to Sir Arthur Evans for the loan (through the Society of Antiquaries) of figs. 42, 52, 87, 88, 94 from his father's works; to the Society of Antiquaries for figs. 28, 33-5, 119, 120 and 179; and to the Royal Anthropological Institute for figs. 176 and 185.

Where the illustrations are not full size, the amount of reduction is generally indicated by a fraction; thus,  $\frac{1}{2}$  means that the original has twice the length and breadth, but four times the area, of the reproduction.

Further illustrations of the Bronze Age collection can be obtained in postcard form at the counter in the Entrance Hall.

This edition has been brought up to date by Mr. Reginald A. Smith, B.A., F.S.A., Assistant in the Department.

C. HERCULES READ.

*July, 1920.*

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## INTRODUCTION

ONE of the most important steps in human progress is marked by the introduction of metal. Apart from the invention of fire-making, which in the childhood of the race helped to raise man above the lower animals, there has been no such advance in our material condition until the development of steam and electricity in quite recent years. The enormous period known as the Stone Age, which can only be measured by geological time, left man still ignorant of many essential arts of life. Substantial progress there had certainly been, as the world-wide relics of that time demonstrate; but it was in many particulars insignificant in comparison with the results achieved since metal began to supersede stone some 5,000 or 6,000 years ago. The earliest efforts of the worker in metal, which made such rapid progress possible, are therefore of transcendent importance in the history of civilization.

The period from the beginning of metallurgy down to the dawn of recorded history is commonly divided into two parts, named after the metals which successively occupied the most prominent place in human industry: an earlier or 'Bronze Age', succeeded by an age of Iron. These terms are so convenient that they have passed into general use, but it must be remembered that no two prehistoric periods can be separated by a hard and fast line. As stated in the preface to the *Stone Age Guide*, the words do not denote divisions of time, but stages of human culture which gradually supersede each other and are not uniform in all parts of the world. The object of the present Guide is to give a general idea of the Bronze Age in its various developments, as illustrated by the Museum collections. While it has been sometimes necessary, for the better comprehension of the Bronze Age as a whole, to treat of parts of the world almost unrepresented in the Prehistoric Room, a proportionately greater space has been devoted to those countries which have furnished larger series of objects, or which stand in a necessary relation to the early archaeology of Britain. To the antiquities of these islands an exceptional position has naturally been assigned.

The very use of the term Bronze Age may appear to beg a serious question, for though bronze was undoubtedly the most important metal employed in the early period, it was probably not the first to be fashioned into an implement or a weapon. Besides the purely ornamental metal gold, there are two others, copper and iron, in favour of which a claim for priority has been

put forward, and of their respective claims a few words must necessarily be said. Metallurgists have pointed out that there is no reason in the nature of things why *iron* should not have first attracted some inventive genius at the close of the neolithic age. Its ores are more abundant and more easily reduced than any others, while in its meteoric form it requires no reduction at all. In this form it has within the memory of man been fashioned into implements by the Eskimo of Greenland, probably without any suggestion or aid from foreign peoples; and it is reasonable to inquire whether it may not have occurred in a similar way and been similarly used in other parts of the world at a remote epoch. It has been suggested, for example, that the use of iron might have been easily discovered by the accidental reduction of a rich piece of ore on the domestic hearth, and the way thus opened to an experimental repetition of the process. It should further be remembered that iron may have been known in Egypt almost, if not quite, as early as bronze; that is to say, as early as the fourth and sixth dynasties. A piece of iron dating from the fourth dynasty is exhibited in the Egyptian Department (no. 2433); while a fragment of hydrated oxide from the sixth, discovered by Prof. Petrie at Abydos, is shown in Case J (p. 172).

These finds confirm literary evidence on the importance of which Egyptologists have long insisted. The word for iron occurs in the Pyramid texts of Unas, and in the paintings of the time of the Ancient Empire weapons and tools are painted blue or black, the hues in which this metal is always represented. Iron plays a prominent part in ancient Egyptian myths, the firmament of heaven being described as a rectangular iron plate; and its Egyptian name is *búa-en-pet*, 'metal of heaven', evidently in allusion to the meteoric form in which it may first have been known. The Chinese too are thought to have been acquainted with iron at least as early as 1000 B.C., and probably even earlier, the province of Shan Si having certainly been productive of the metal since very remote times. But reasonable as such arguments in favour of the priority of iron may appear in themselves, there is one thing wanting to their serious consideration: they are not often borne out by archaeological discovery. We know that when men have once become acquainted with the harder metal, they soon cease to make their weapons of the softer; the fact is proved beyond controversy by finds of the transition period at the close of the Bronze Age, when the bronze sword or dagger is superseded by that of iron, bronze being retained only for ceremonial or ornamental purposes. It is most unlikely that if iron had been used before any other metal, it should have fallen into disuse in any place where its ores could readily be obtained; or that men once acquainted with its superior merit should have continued to manufacture weapons of a metal inferior in offensive power.

This consideration disposes of the argument that *primaeva* iron weapons may once have existed but have now rusted away; for it is not to be supposed that the long series of bronze weapons which we now possess would ever have been made if all the time iron had lain ready to the hands of their makers. It is equally difficult to believe that iron weapons deposited with the dead would have disappeared so completely as to have left in no single instance even a trace of discoloration upon the surrounding objects. The following remarks of Sir John Evans, which have a direct bearing on the subject, may fitly be quoted here: 'When barrow after barrow is opened, and weapons of bronze and stone only are found accompanying the interments, and not a trace of iron or steel; when hoards of rough metal and broken bronze, together with the moulds of the bronze-founder and some of his stock-in-trade, are disinterred, and there is no trace of an iron tool among them—the presumption is strong that at the time when these men and these hoards were buried, iron was not in use. When, moreover, by a careful examination of the forms of bronze instruments we can trace a certain amount of development which is in keeping with the peculiar properties of bronze, and not with those of iron, and we can thus to some extent fix a kind of chronological succession in these forms, the inference is that this evolution of form, which must have required a considerable amount of time, took place without its course being affected by any introduction of a fresh and qualifying influence in the shape of iron tools and weapons. When, however, in various countries we find interments and even cemeteries in which bronze and iron weapons and instruments are intermingled, and the forms of those in bronze are what we have learned from other sources to regard as the latest, while the forms in iron are not those for which that metal is best adapted, but are almost servile copies of the bronze instruments found with them, the proof of the one having succeeded the other is almost absolutely conclusive.'

The same authority points out that at Hallstatt and other places in which graves have been examined belonging to the transitional period, when both iron and bronze were in use together, the weapons and tools of iron, though oxidized, still retain their form and character as completely as those in bronze. This fact affords strong ground for believing that had iron been present with bronze in other early interments, it would also have been occasionally preserved. Arguments like these are incontrovertible in the case of most countries where prehistoric implements have been found, but in such regions as north-eastern Africa there is still perhaps room for doubt. Evidence in favour of the extreme antiquity of iron in Egypt has already been given, and it must not be forgotten that Africa, which as a continent never had a Bronze Age, was possessed of abundant ores from which good malleable iron could

be extracted by processes far simpler than those required for the manufacture of bronze. The district west of the Upper Nile is very rich in iron, and Professor Gowland has shown that the furnace used in modern times in Kordofan has close analogies with one represented on a tomb bearing the name of Thothmes III (about 1500 b. c.) and with those employed by the Etruscans and other peoples of Southern Europe west of the Apennines. The metallurgy of iron in this part of Africa was evidently both an ancient and a vigorous art, and its origins may be more remote than is usually suspected.

Iron may, however, be fairly eliminated from the general inquiry: there remain copper and bronze, the former a simple metal, the latter an alloy of copper and tin. In Alaska, about the Coppermine River, and on the shores of Lake Superior in North America, also in parts of Central Africa, ores containing copper in the metallic state were made by the natives into knives and spear-heads before the advent of the European invader, and some of the American tribes thus passed from the exclusive use of stone to the knowledge of copper simply by the exercise of their own inventive faculty. If the Red Indian was able to make this advance, why, it may be asked, should not prehistoric man have done the same in Europe? But the North American copper ores contained nodules and large masses of copper as metal, and were treated by the Indians as if they had been stone, being hammered into shape without exposure to heat: the Indians were thus merely users of metal and in no sense metallurgists.

On the other hand, the prehistoric inhabitants of the Old World melted their copper before they fashioned it; at any rate, all the copper implements known to science have certainly been produced by casting, which presupposes a more significant advance in human knowledge, and one much more difficult to explain, involving as it does the introduction of completely new methods and the employment of fire. In some localities where oxidized copper ores (cuprite or malachite) occur in admixture with tin ore (cassiterite), a true bronze may have been made contemporaneously with, or even earlier than the pure metal; and the alloy, at first due to accident, may have been almost immediately reproduced of set purpose. For the primitive mind is not unobservant, and if many of the uncivilized tribes of the modern world are capable of the like simple experimental processes, there is no reason why prehistoric man should not have given proof of similar aptitude. But it is probable that in most localities copper was really the first metal of which implements were made, and, being far more widely distributed than tin (the second constituent of bronze), is more likely to have attracted man's notice first, especially in the form of oxides and carbonates, which are surface ores.

There are still great numbers of primitive metal implements which have not been chemically analysed, and the material available for a scientific generalization is very incomplete ; but the evidence so far as it goes is against a *universal* stage of culture characterized by the sole use of copper. Such a stage is not proved, for instance, in Britain, though certain indications seem to point in that direction. The fact that the most primitive forms frequently prove to be made of copper, though favourable to the theory of a Copper Age, is not in itself conclusive ; for, as the opponents of the theory have pointed out, copper can only be successfully cast in flat moulds open to the air, and if it is poured into double or closed moulds it produces unsatisfactory results. Even if all the known implements of primitive form proved to be of copper, this might still only show that tin was for some reason temporarily unobtainable, and that casters who were perfectly well able to produce forms of a more elaborate description, fell back on the forms of primitive appearance because these were alone suited to the metal actually at their disposal. Really effective evidence in favour of a general phase of culture based on the exclusive employment of copper, though it may confirm the argument from form, must be independent of it, and such independence can only be claimed in certain definite regions such as the countries of the Eastern Mediterranean. Over this area the occurrence of copper in deposits of objects, unquestionably older than the first appearance of bronze, is too frequent to be accounted for on the supposition of a temporary failure of tin ; and though the conditions were not quite the same in Europe, the analysis of various specimens has shown that a similar state of affairs may have existed in some parts of our own continent.

In many districts of Europe, indeed, such as North Italy and Hungary, analysis is in favour of a primitive Copper culture, while in Ireland the results as yet obtained seem to tell the same tale. The presence of a small percentage of tin—anything from 0·5 to 1 or even 2 per cent.—need not imply an intentional addition, because the impure ores from which the implements were made have been shown to contain the same admixture : the tin was in these cases not added by man with the object of hardening the metal, and consequently the implements are copper, and not a poor quality of bronze. Such natural admixtures are most frequent, and offer the highest percentage of tin, in areas where tin ores also occur ; but they are also found in districts where tin ore has never yet been found, for instance, at Campos and Parazuelos in south-eastern Spain. The same remarks apply to arsenic and antimony, which are also common impurities of copper ore and have a like hardening effect. Mr. George Coffey, in discussing the composition of primitive Irish celts, fairly argued that 'only when it has been shown that the local ores,

from which it may be presumed that the copper was obtained, are free from tin, does it seem allowable to argue that the tin has been added, and even then the possibility that the copper or implements were imported has to be considered'. In some cases, as for example in Babylonia, the evidence for the priority of copper may be described as stratigraphical, and is in no way dependent upon primitive appearance.

If then we assume that copper preceded bronze in many parts of the world, we may suppose that progress was effected very much on the following lines. In a favoured district, or possibly in more than one place about the same time, a simple process of moulding molten copper as a substitute for stone may have been suggested by an accident, such as the partial melting of a piece of surface ore in the hearth. The new material was found convenient for several reasons, notably because it was not brittle, and because a number of implements could be made with rapidity from a single mould. But in many respects it proved inferior to the stone which preceded it, for if the ore was pure it was extremely soft, and its cutting edge was easily dulled ; it became necessary therefore to find some means of hardening the metal. Probably by experiment the inhabitants of some region in which not only copper but also tin occurred, discovered that copper could be most effectively hardened by the addition of tin. They would transmit the alloy to their neighbours ; and, by degrees, following the great lines of commerce and intercourse, first its use, and ultimately its manufacture would become known to almost all the peoples of the ancient world. Those who had already experimented with copper would immediately adopt the superior alloy ; those who were still in the neolithic stage would pass without transition to the use of bronze. It cannot be affirmed as a universal rule that the proportion of tin alloy in the early bronzes only reached the ratio of about 10 per cent. by a slow and gradual advance. It is, indeed, a plausible theory that the most ancient specimens are the poorest in tin, and that as this metal grew more plentiful the alloy became richer by degrees, but there are facts which tell in the opposite direction. In the second city of Hissarlik, for instance, which preceded the Homeric city of Troy by about a thousand years, a bronze very rich in tin makes its appearance suddenly, without having been preceded by poorer alloys (p. 164).

In concluding these remarks upon the order in which metals were used, we may draw attention to some of the literary evidence proving that the ancient traditions as to the sequence of prehistoric ages have often been confirmed by modern archaeology. Hesiod, in his *Works and Days*, speaks in the eighth century, B.C. of a time when men wrought in bronze, but when 'dark iron was unknown'. And Lucretius (about 50 B.C.), in the fifth book of

his poem on the *Nature of the Universe*, gives a graphic picture of primitive life, towards the close of which occurs the distinct statement that iron (*ferrum*) was discovered later than *aes* (copper?). Again, Aeschylus in his tragedy of the *Seven against Thebes* (acted in 471 B.C.) alludes to iron as the 'stranger from across the sea', 'the new-comer from the Scythians', and 'the Chalybian stranger', the two last expressions pointing to the eastern shores of the Black Sea as one of the sources from which the Greeks obtained their iron. Here, under the shadow of the Caucasus, and not far from the Scythian steppes lived the Chalybes, one of the great iron-working peoples of the Old World, whose name has been transmitted through the adjective 'chalybeate' to the modern languages of Europe. These allusions of Aeschylus point to a time when iron was still regarded somewhat as an intruder, and illustrate the superstitious feeling of almost all peoples who have passed from one stage of culture into another. Compared with the newer metal the old has a prestige and sanctity attaching to it, as having been associated from ancient times with the gods and heroes of their race. Allusion has been made to a similar feeling in favour of stone in the *Stone Age Guide*, where instances are mentioned of stone knives being still used for ceremonial purposes long after the knowledge of bronze had become general. We find the same veneration for the implements of older times in the later period when bronze had in its turn been superseded by iron. In ancient Rome the priest of Jupiter might shave his beard only with a bronze knife, and it was an ancient usage that the site of a new town might only be ploughed round with a ploughshare made of bronze. The same feeling is expressed in the Book of Deuteronomy (xxvii. 5): 'And there shalt thou build an altar unto the Lord thy God, an altar of stones: thou shalt not lift up any iron tool upon them.' Folklore tells a constant tale of the fear with which iron was everywhere regarded as something new and uncanny by the conservative sentiment of the countryside, a fear engendering a feeling of awe for the smiths and founders who were able to bend the formidable substance to their will. To the smiths mysterious powers were generally assigned, and they were often regarded as abnormal or even supernatural beings. Sir Walter Scott in *Kenilworth* has utilized the legend of Wayland Smith, the northern hero of the forge; while Greek and Roman mythology places a metal-worker, Hephaestus or Vulcan, among the gods. His workshops were held to be in the volcanic districts of Sicily and the neighbouring islands; and here, in the caverns beneath Etna, the Cyclopes forged the armour which Thetis begged for her son Achilles. Even the representatives of a despised or vanquished people have reaped the advantage of this sentiment if, as has sometimes happened, the dominant race is less skilled in the working of metals.

It now becomes necessary to touch upon another unsolved problem, the origin of the manufacture of bronze. In what part of the world was the alloy first produced? Any answer given to this question must necessarily take into consideration the distribution of tin; for if traces of tin workings exist within easy reach of the most ancient centres of civilization, a way out of the difficulty may be found. At present the piece of bronze for which the highest antiquity is claimed is the rod found at Médum in Egypt, dating about 3000 B.C. Mesopotamia can show a statuette of Gudea (2500 B.C.), and an almost contemporary vase of Ur Engur, but both these are now said to be of unalloyed copper, and a contemporary statuette of a basket-carrier is of copper with 18 per cent. of lead. So far as is known, tin was not found within the borders either of Egypt or Babylonia; and the nearest regions rich in metals, even Armenia and the Caucasus, appear to be devoid of stanniferous ores. Tin is said to exist in Asia Minor, and the Greek historian Strabo declared that it was produced in Drangiana, west of the modern Afghanistan, a district partly coinciding with Khorassan, where its presence has been confirmed. It is also found in other parts of Persia, near Astrabad and Tabriz, and the allusion to it in *Numbers xxxi* as part of the spoils of Midian, suggests that there may even have been mines in north-west Arabia.

In Eastern Asia, beyond the radius of the ancient civilizations of Mesopotamia, there would seem to be no region likely to have witnessed the discovery nearer than Southern China; for India, which has copper implements of a very primitive type, is poor in tin, her so-called bronze being often really brass: while the Malay peninsula, an extremely rich stanniferous region, does not appear to have been mined in very ancient times. In Southern China copper and tin are found together in abundance under conditions which would give every opportunity for primitive experiment; but here again we have to rest content with a bare statement of possibility, for proofs are not forthcoming. We know nothing of the state of China in the fourth millennium B.C.; yet unless a theory of independent invention in different parts of the world is adopted, it is to this remote period that the first use of bronze in that country must be assigned. If China originated, Mesopotamia and Egypt must have followed, and yet they produced bronze as early as 3000 B.C. And the difficulty would hardly be lessened if the date of the Médum rod should prove to be a thousand years later than that usually claimed for it. The search for the birthplace of bronze in China is therefore barren of positive results, though there is ample room for future discovery in what is, archaeologically speaking, almost an unknown land.

The East thus affording no certain clue, the possibilities of the West may be briefly examined. Tin is found in Britain, France,

north-west Spain, Italy, Germany, Bohemia, and the Balkan Peninsula, mostly within reach of copper ores. Here, however, we are once more confronted by the difficulty that proofs of the invention are lacking, and that unless we suppose more than one centre of discovery, the acceptance of a European claim to priority would imply a knowledge of bronze in the West as early as 3000 B.C. In the present state of our knowledge we are unable to solve these problems, and if the attribution of the discovery to Babylonia is preferred as offering fewest difficulties, it must be regarded as little more than a temporary hypothesis. It is, of course, conceivable that there may after all have been more than one centre of invention ; for if such an independent discovery took place in America, as some authorities hold (p. 4), it might equally well have done so both in Asia and Europe. But there is much to be said against this view ; and if the forms of our dolmens and chambered tombs of the neolithic period are of oriental derivation, while Mediterranean influence crossed the Alps and the Danube almost as early, there is certainly a presumption that the art of casting bronze in Europe was equally dependent on the Near East.

Wherever bronze may have first been made, its obvious superiority over copper and stone caused it to be adopted by all peoples who could procure either the manufactured alloy or the tin which would enable them to produce it for themselves. Its use spread with comparative rapidity from end to end of the ancient world ; and as this vast area provided ample room for the development of local types, it is natural to find a number of archaeological provinces, overlapping each other at certain points, but distinguished by marked individual peculiarities. Thus the style of Western Europe differs from that of Scandinavia and North Germany ; the lake-dwellings of Central Europe have a common culture ; Italy, the Balkan Peninsula and the Danube valley are more closely related to the countries of the south-eastern Mediterranean ; the Islands of the Aegean have more points of contact with Asia Minor, Egypt, and the early civilization of the Near East ; while the immense area extending from South Russia across the Ural Mountains and the Altai Range is in touch with the western frontiers of China. Within these provinces there are various subdivisions affected by special geographical and cultural conditions, which will be mentioned below in the short introductions to particular countries. In the present place only a few general considerations can be introduced which may help to explain why the Bronze culture often shows markedly different types in districts not very far removed from each other.

It has been stated in the *Stone Age Guide* (p. 1) that there is no sharp line of demarcation between the great prehistoric periods, and that some regions received and developed new inventions far

earlier than others. The important step of discarding bronze in favour of iron was taken by some peoples centuries earlier than others, although the distance between their territories may have been only a few hundred miles. The reason for this inequality of culture is to be sought in geographical conditions. Those countries which were situated upon or near the main lines of commerce and intercourse were naturally the first to take advantage of the latest achievements of human ingenuity, while those which lay in remote inaccessible parts of the world were content to continue for a long series of years the use of a material which had already been superseded among their more progressive neighbours. The loss in aggressive power by the more backward peoples through the continued use of a metal inferior to iron for warlike purposes was not without compensating advantages; for as the time during which they used bronze was indefinitely prolonged, they were able to develop the artistic qualities of the metal in a higher degree, and to produce more varied forms with ornamentation of more elaborate design.

On the other hand, the bronze implements and weapons discovered in countries where iron was introduced early are scantier and less decorative, because there was less time for such a prolonged artistic development. Italy, Southern France, and Upper Austria all offer examples of a Bronze culture cut off before it reached full perfection, the first country having always been open to all the civilizing influences of the Mediterranean, while Southern France and Upper Austria, lying as they did on the great trade-routes for tin and amber (p. 136), were naturally quick to adopt any useful innovation. In all these countries, therefore, bronze antiquities tend to be simpler and less ornate than in regions where the introduction of iron was delayed. Very different were the conditions in Eastern Hungary and Scandinavia. The first region lay away to the east of the amber route from the head of the Adriatic to the Baltic; while the second was then at the end of the known world, and was naturally the latest to be affected by southern civilization. The consequence of this comparative isolation was in an artistic sense a happy one, for in these regions the Bronze Age is represented by a series of antiquities which for splendour and wealth of ornament have no parallel among the remains of countries otherwise more favourably situated. Sentimental or religious reasons seem also to have intensified the conservatism natural to remote populations, for there is some reason to believe that the inhabitants of the less progressive countries at first adopted a rather hostile attitude to iron, and in their attachment to the more beautiful metal, to which they had been so long accustomed, were disposed to resist the introduction of an unfamiliar substitute.

The principal questions connected with the first appearance of

metals in human industry having been thus briefly indicated, it is now desirable that something should be said about the peoples concerned with the early development of metallurgy. To attempt to deal with the ethnology of the whole ancient world at the period when metal-working first became general would be impossible here. The position and movements of the Eastern peoples will therefore be omitted, and the attention of the reader almost exclusively directed to the groups inhabiting those parts of the world with which the British Islands and the adjoining countries are most intimately connected.

Before the racial affinities of the primitive European population are considered, something must be said on the Aryan question, which has passed through several stages, but is not by any means finally settled. Towards the close of the eighteenth century, Sir William Jones drew attention to the striking similarities between Sanskrit, Greek, Latin, German and Keltic, similarities that could only be explained by a common parentage. Bopp's *Comparative Grammar*, published in 1833-5, established the science of comparative philology; and all the European languages except Basque, Finnic, Magyar, and Turkish were comprised in what was called the Indo-Germanic group. The title is misleading, but the more usual term Aryan, invented by the late Professor Max Müller, is also open to many objections. *Arya* is a Sanskrit adjective meaning 'noble', and in the Vedic hymns it appears to be a name assumed by the conquerors who introduced the language of the Vedas into India. In the Zendavesta, the most ancient Persian text, the country of the Aryans is mentioned, and it was long held that Ariana, the district round Herat, was the cradle of the Aryan languages. Professor Max Müller was the foremost champion in this country of the Asiatic origin of the Aryan civilization, and in 1861 spoke not only of an Aryan language, but an Aryan race or family; this was originally settled on the Central Asian plateau, and spoke a language not yet Sanskrit, or Greek, or German, but containing the dialectical germs of all these kindred tongues. The conclusions as to the Aryan civilization reached by extreme philologists are now greatly discredited, and the reaction against the oriental origin of the Aryan was started as early as 1851, when Dr. R. G. Latham, of Cambridge, published his objections to the prevalent theory. He pointed out that the bulk of the Aryan peoples is found in Europe, and only a detached body in Asia, while Lithuanian is closely related to Sanskrit, and no less archaic. The specially archaic character of Sanskrit and Zend is mainly due to the fact that existing documents in those languages happen to be older than those in any other Aryan tongue. If, for example, we possessed a Lithuanian literature of the same early date, it might with equal justice be argued that the cradle of the Aryans was in the neighbourhood

of the Baltic. The philological evidence, so far as it goes, is against the view advocated by Professor Sayce in 1880, that the primaeva Aryan community inhabited Bactriana, near the sources of the Oxus and Jaxartes. The question as to the distribution of the beech-tree is also important, and turns on the original meaning of the word represented in Greek by *φηγός*, and in Latin by *fagus*. It is common to all the Aryan languages of Europe, and is generally taken to indicate the beech, though in Greek it undoubtedly means the oak. This may be accounted for by the fact that the beech is not found in the Morea or south of the line between the Gulf of Arta and the Malian Gulf, where the oak flourishes; and the ancestors of the Greeks on reaching the peninsula from the Balkans may have transferred the name. Nor does the beech occur east of a line drawn from the southern extremities of Norway and Sweden, through Königsberg, east of Poland along the Bug Valley, to the Crimea and the Caucasus. This is so far in favour of a European origin for the Aryan language if not for an Aryan race, and though the claims of Scandinavia have been brought prominently forward by Karl Penka and others, south-west Russia seems to be the district open to least objection.

This will become more apparent when a sketch has been given of the civilization reached by the Aryans before their dispersion. A study of their vocabulary, such as that undertaken by Dr. Schrader, and edited for English readers by Principal Jevons, shows that in their original home they had reached a stage of culture that is best illustrated by the earliest remains discovered in the lake-dwellings of Switzerland. According to the late Canon Taylor, they were nomad herdsmen who had domesticated the dog, and possessed ox-wagons and dug-out canoes, but no metals except possibly copper. During summer they lived in huts, during winter in pits. Their dress consisted of skins sewn together, and they knew how to kindle fire and to count up to 100. It is doubtful whether they tilled the ground, but they probably pounded wild cereals, such as spelt and barley, in stone mortars. Marriage was a recognized institution, but they were polygamists, and practised human sacrifice. While believing in a future life, as is shown by their care of the dead, they had no idols, but probably reverenced the powers of nature. In the way of food they had hazel-nuts, water-chestnuts, and acorns, but it is remarkable that they did not habitually eat fish. No common word for any kind of fish has survived in their language, with one or two possible exceptions. In this connexion it may be mentioned that the Homeric heroes regarded fish as starvation diet (*Od.* xii. 332), but it was popular in classical times. Herodotus (ii. 37) records that the priests of Egypt were forbidden to eat fish, but this may have been a superstition surviving from prehistoric times.

Strictly speaking, the term Aryan should be only applied to the primitive people who evolved the root-words and grammatical forms that can be traced in Greek, Latin, and other Italian or Romance languages, Keltic, Teutonic, Slavonic, Lithuanic or Lettic, and Albanian; in fourteen modern Indian languages derived from Sanskrit; in the Tokharic of Siberia, in Zend, Persian, Pushtu or Afghan, Baluchi, Kurdish, and Ossetic; also in Armenian and possibly in the ancient Hittite. It must, however, be borne in mind that only a small proportion of the millions who speak these languages can possibly represent an original Aryan people, nor is community of language an argument for blood-relationship. The opinion is becoming more and more general that the Aryan language was forced upon the aboriginal inhabitants of Europe towards the end of the neolithic period; and this was due to invasion by a stalwart race with short skulls and fair hair, who radiated from some point in south-east Europe into the Mediterranean peninsulas, into France, Germany and Britain. The new-comers are sometimes known as the Alpine race, and seem to have settled in strength along the Upper Danube and in Switzerland. Some authorities regard the Kelts as the most direct descendants of the primitive Aryan stock, while the other peoples who speak Aryan dialects are of impure descent, and were only Aryanized by conquest.

And here some explanation of the term Kelt is necessary. It is throughout spelt in this way to prevent any possibility of confusion with the celt, an implement of chisel-form (from an imaginary Latin word *celtis*), of which specimens both in stone and bronze are exhibited in this gallery. A far more subtle danger lies in the common confusion of the Kelts of philology and the Kelts of history and ethnology. The historical and anthropological evidence has been carefully sifted by Dr. T. Rice Holmes, and his conclusions have been widely accepted, but the confusion dates at least from the century before Christ. Julius Caesar's famous division of Gaul into three parts shows that Keltic influence was strongest in a central belt, from the Bay of Biscay to Switzerland, which was inhabited by the Alpine or Grenelle race now represented in the Auvergne, Dauphiny, Savoy, the Grisons, and the maritime Alps. This race was short, dark-haired, and extremely brachycephalic (short-headed), with a mean cephalic index of 84. But Caesar also states that the people who called themselves Kelts were called by the Romans Gauls; and it now seems clear that this indigenous short-headed population was conquered by Kelts pushing westward from beyond the Rhine, and adopted the language of their conquerors. Philology teaches that Keltic speech was unknown in these islands before the seventh century B.C., and other names must therefore be found for earlier invaders. The first Keltic-speaking population

of Britain burnt their dead, either in our late Bronze Age or the Hallstatt period (earliest Iron Age), hence their physical characteristics cannot now be determined. These invaders were no doubt racially mixed, but the dominant strain corresponded to descriptions of the Kelts by ancient and modern authorities, being tall and fair, either mesaticephalic, with cephalic index (or ratio of the skull's breadth to its length, the latter being represented by 100) of 75-80, or dolichocephalic, with index between 70 and 75. Though less fair than their Gaulish kinsmen, they were, according to Strabo (about 54 B.C.-A.D. 24) taller than those left behind on the Continent.

Something may now be said of the traces left by the inhabitants of this country during the Bronze Age. The barrows of Britain have occupied the attention of many eminent archaeologists; and the broad results of their exploration may here be mentioned, though it cannot be pretended that any great uniformity has been observed, or that the deductions drawn are in any way final.

First, as to the disposal of the dead. In the neolithic period, to which the Long barrows are referred, we meet with a striking difference in the methods adopted in the north and south of England. While an elaborate system of cremation was adopted in Yorkshire and Westmorland, the Long barrows of Wiltshire and Gloucestershire contained unburnt burials, but there are at the same time points of uniformity which indicate that the difference was one of locality only and not of date: for the skulls are uniformly long (dolichocephalic), and the barrows themselves are very long in comparison with their breadth, and almost always placed with their long diameter east and west, while the primary interment is generally at the east end, which is both broader and higher than the other.

In the Bronze Age, both burnt and unburnt burials are found in barrows that are circular and more or less conical; and instances may be quoted in which the circumstances show that both methods were resorted to on certain occasions: for instance, in a mound on Acklam Wold, Yorkshire, opened in 1849, a pile of burnt bones was in close contact with the legs of a skeleton buried in the usual contracted position, and they seemed to have been deposited while yet hot, for the knees of the skeleton were completely charred. It has been suggested that in cases like this, or where an unburnt body is surrounded by a ring of urn-burials (as fig. 57), the entire skeletons may be those of chiefs or heads of families, and the burnt bones those of slaves, dependants, or even wives, sacrificed at the funeral. The practice of *suttee* in Europe rests indeed on the authority of Julius Caesar, who represents such religious suicides as having, at no remote period from his own, formed a part of the funeral rites of the Gaulish chiefs; and

also states that the relatives of a deceased chieftain accused his wives of being accessory to his death, and often tortured them to death on that account. It is also possible that fire was used in certain cases, not to consume the body, but for purification or some other ceremonial purpose.

Details of burials in Round barrows will be found in the description of the Cases containing pottery and other remains from these sources (pp. 78, 81); but the excavations and publications of Sir Richard Colt Hoare in Wiltshire, of Chas. Warne in Dorset, Thos. Bateman in Derbyshire, and Canon Greenwell, J. R. Mortimer, and the Rev. J. C. Atkinson in Yorkshire and the north, have brought out some striking facts with regard to Bronze Age interments in England. The results obtained before 1874 were ably summarized by Dr. Thurnam, who had himself excavated in Wiltshire and elsewhere. While in Derbyshire, Staffordshire, and Yorkshire the unburnt burials slightly preponderated, in Wiltshire and Dorset they amount to less than a quarter of the total explored; though it must be observed that in Cleveland, the extreme north-east district of Yorkshire, the interments in forty grave-mounds excavated by Mr. Atkinson had been without exception by way of cremation. Cremation appears to have been by far the most common usage in Cornwall, and almost universal in the counties of Denbigh, Merioneth, and Carnarvon; while in Northumberland the proportion of burnt to unburnt bodies, from over seventy interments, was almost two to one. About one-quarter of the cremated bodies in Wiltshire were deposited in cinerary urns, in striking contrast to what was observed in the adjoining county of Dorset, where the proportion is almost exactly the reverse, or as three to one. In Cleveland the burnt bones were collected in urns in thirty-two cases out of fifty, and in general it was noticed that urns were utilized much less frequently in the Yorkshire Wolds than in other parts of England, though there seems to have been nowhere any rule as to their upright or inverted position in the barrows.

The occurrence of bronze or copper implements and ornaments in the Round barrows has an important bearing on their date; and in this respect there are wide differences observable in various parts of the kingdom. It must be borne in mind that a large majority of the interments have no articles of any description associated with them, and many of the remainder have only pins, buttons, or other minor objects. The appearance of metal, usually bronze, is the important point, and this seems to be more frequent in the districts most easily accessible from the Continent. For instance, about one-fifth of the total interments, burnt and unburnt, explored by Hoare in Wilts. contained bronze implements, weapons, or ornaments; and only half as many contained objects of stone, which are presumptive evidence of earlier date or of

inferior civilization. In Derbyshire, on the contrary, interments accompanied by stone implements were nearly four times as frequent as those with bronze; while figures are given elsewhere (p. 65) showing that only about 4 per cent. of the interments on the Yorkshire Wolds contained metallic objects of any kind, against 17 per cent. with implements of stone. In the words of Dr. Thurnam, the inference need not be that there is any great difference in the epoch to which the grave-mounds of the various districts are to be attributed; but rather that the southern tribes were better or earlier provided with bronze than the northern; and that the use of weapons and implements of this metal began on the southern coast, and thence gradually spread over the interior and north of the island.

In connexion with the spread of bronze throughout this country, it should be mentioned that though there is a great variety in the hundreds of bronze implements discovered, either in hoards or scattered over the surface, sunk in boggy ground, or lying on a river-bed, a very small proportion of types has ever been found in barrows, either in association with interments or lying apart in the material of the mound. Those that have occurred in burial-mounds are comprised under the head of the plain axe or celt, the knife-dagger, drill, and awl; while swords, daggers of another kind, spear-heads, the other types of celts, gouges, and chisels are conspicuously absent, with one or two possible exceptions. Hoards, which contain various objects more or less of one date, do not furnish any examples of the types discovered with interments; and the conclusion seems inevitable, not that any particular patterns were adopted exclusively for funeral purposes, but that the barrows in general belong to a period before bronze was in common use, metal at that time being scarce and only manufactured into articles of a comparatively small size, such as those usually found with burials. This conclusion is strikingly confirmed by the discovery of the whole effects of a family of the Bronze Age in Heatherly Burn Cave, co. Durham (Cases 56, 57). The list included almost every type of the period which has been found elsewhere, and some that have been met with nowhere else, but not one example of either the plain celt or knife-dagger of the barrows. The distinction is not so marked in the case of pottery, though here too there seem to have been various forms confined to the barrows. Vessels that may well have been used for culinary or other domestic purposes have been frequently found associated with interments, and it is easy to believe that the skill required to mould and ornament the distinctive pottery of the barrows was not always or everywhere available, so that commoner vessels were substituted. All, however, were of home manufacture, local fabrics being sometimes distinguishable; and, whatever may have been the case with bronze, it is fairly certain

that pottery from the barrows has no claim to be regarded as exotic, but was produced in the localities where found.

Inhabited sites of the Bronze Age in Britain are practically unknown ; but besides the Durham cave may be mentioned a few earthworks in Cranborne Chase, approaching the square form, explored by Gen. Pitt-Rivers, and attributed to this period, though the tangible evidence was scanty. Rubbish-heaps or kitchen-middens fringing the shore of Gullane Bay, Haddingtonshire, have yielded domestic beakers, showing the intrusion of Bronze Age invaders (p. 69). A mixture of this type with neolithic fragments has been noticed at Peterborough, and beakers of peculiar form (p. 67) have come from refuse-pits at Hitcham, Bucks. It may be inferred that the beaker, at least, was not confined to burials, but was originally domestic.

In addition to modes of burial, and distribution of bronze, the skull-forms throw some light on the affinities and characteristics of the inhabitants, whose remains are met with in our Round barrows ; and the progress of discovery has only confirmed the rule enunciated by Dr. Thurnam, that long skulls are found in Long barrows, and short (rather than round) skulls are found in Round barrows. Prof. Keith has followed up the inquiry, and it is evident that during the Round-barrow period the population was very mixed. In Yorkshire, for example, dolichocephalic and brachycephalic skeletons were found in very nearly equal proportions, while the earlier or Long barrows contained dolichocephalic subjects exclusively. The skulls here illustrated as specimens were described by Professor Rolleston in his contribution to *British Barrows*, and clearly exhibit the marked differences observable in Round-barrow skulls. The first (fig. 1) is that of a strong man past middle life, from a Round barrow at Helperthorpe, East Riding of Yorkshire. The body, which constituted the primary interment, had been laid on the left side, and in a contracted position, with the head to the north and the left hand up to the face, in front of which was part of a flint knife, while at the head was the tine of a red deer's antler. The cephalic index is 71, which is well within the dolichocephalic, or long-headed limit of 75. The second skull illustrated (fig. 2) belonged to a man past middle life, and 5 ft. 7 in. in height. This too may have been a primary interment in a Round barrow at Cowlam in the same Riding, six miles from Helperthorpe ; and the contracted or crouching skeleton lay on the left side, with the head to the south-east and the hands up to the face. With a cephalic index of 84, this subject must be classed as brachycephalic, or short-headed. It must, however, be remembered that the proportionate width of the skull is only one of many characteristics that distinguish the two types just exemplified ; and the respective skeletons themselves support the view that the long and

short-headed occupants of the Round barrows belonged to different races. For instance, skeletons from the Long barrows, in which the dolichocephalic population is exclusively represented, give 5 ft.  $5\frac{1}{2}$  in. as the average male stature, while the brachycephalic men of the Round barrows (with index of 81-3) were on the



FIG. 1.—Dolichocephalic skull, Helperthorpe, E. R. Yorks.

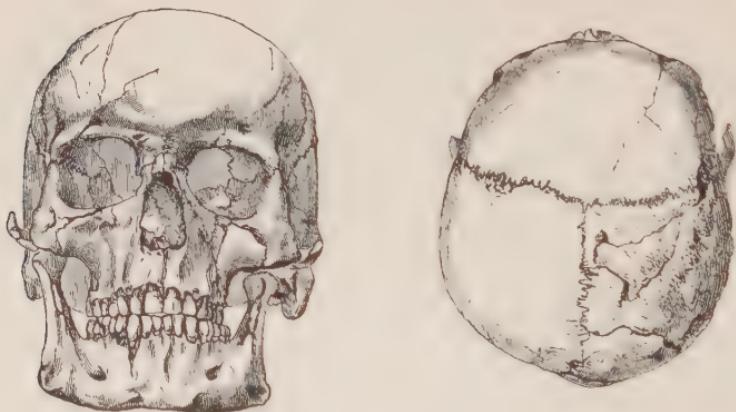


FIG. 2.—Brachycephalic skull, Cowlam, E. R. Yorks.

average 5 ft.  $8\frac{1}{4}$  in. in height, and stronger in proportion. The typical inhabitant of this country in the Round-barrow or Bronze period has been compared by Professor Rolleston to the modern Dane; but recent excavations in the East Riding have brought to light a large proportion of intermediate skull-forms, which show an extensive fusion of races, at any rate in that part of the country.

The earliest Bronze Age invaders were no doubt racially mixed before leaving the Continent, and after their settlement here amalgamated with the aborigines, who were descended from the long-skulled people of the Long barrows. But among the short-headed subjects themselves two distinct groups can be defined: (i) taller, stronger, and more rugged skeletons, with sloping forehead and prominent eyebrow ridges, outstanding and heavy cheek-bones, and large teeth in projecting jaws; and (ii) a more refined type with high as well as round and broad skulls, not prognathous, with the lower jaw small, the face broad and short, slight superciliary ridges, and the cheek-bones not prominent.

The evidence afforded by skull-forms should be viewed in connexion with the most recent pronouncements on the ethnology of early Britain from the philological point of view. According to the late Sir John Rhys and Sir Brynmor Jones, the earliest inhabitants of these islands whose name has come down to us were the Picts; and although the question of their origin and affinities cannot be regarded as finally settled, it seems clear that the people whom Julius Caesar represents as claiming descent from the aboriginal islanders were the Picts, who eventually found a home in North Britain, and retained their language and institutions latest on the east coast of Scotland, in portions of the region between Clackmannan and Banff. One of the most remarkable facts known about the Picts is the absence among them of the institution of marriage as known to the Aryan peoples; and in later times succession is known to have been through the mother, pointing back to a time when society was based on matriarchy. The same conclusion as to the probable non-Aryan origin of the Picts is warranted also by their peculiarities of speech, but remains of their language are unfortunately scanty. It was eventually overloaded by words borrowed from the language of subsequent invaders, but a non-Aryan element is still discernible.

In the sixth and fifth centuries before our era there were important movements in the Keltic world of the Continent, and branches of the race reached the Mediterranean, establishing themselves later in the country called after them Galatia, in Asia Minor. It is unlikely that these islands remained unaffected by the Keltic migrations, but it was possibly before that date that a branch of that widespread family settled in these islands. The Keltic-speaking pioneers are now generally spoken of as *Goidel* or *Gaoidheal*, the latter being the modern form of the name, which is pronounced and spelt in English *Gael*. They had presumably occupied most of the island south of the Firths of Clyde and Forth before another people of Keltic speech began to make incursions on these shores.

The new-comers are known as Brythons, and it is from them that the name Britain is derived. A chronological limit for this second wave of Keltic immigration is possibly afforded by the express mention of Britain in the record of the voyage of Pytheas, a Greek of Marseilles who explored north-west Europe about the time of the philosopher Aristotle, towards the end of the fourth century b.c. ; but the name may have been merely put into his mouth by Strabo, who quotes from a lost original. Some time before Caesar's invasion a third conquest of this island by people with a similar language had taken place, and as he found the Belgae in possession of the south, it is evident that by that time the Brythons, who had been steadily driving their predecessors, the Goidels, to the extremities of Britain and probably into Ireland, were themselves being pressed northward by more recent invaders who have left their name to Belgium.

The Brythonic and Goidelic divisions of the Keltic Aryans (in the linguistic sense of the terms) have been conveniently distinguished by philologists as P and Q Kelts respectively, with reference to one of several marked contrasts in their languages. In the Goidelic group of dialects, embracing at the present day the Gaelic of Ireland, of the Isle of Man, and of Scotland, *qu* corresponds to *p* in the Brythonic of Wales, Brittany, and (till recently) Cornwall ; and a similar distinction is observed in the Latin and Umbro-Sannite dialects of ancient Italy : thus the name Pontius is a dialect variety of the Roman Quintius : and the Welsh *map* (now *mab*), a boy or son, corresponds to the Gaelic *mac* or *mag*. It is fairly certain that the non-Aryan aborigines are largely represented in the present population of this country ; and it appears from their language that the Goidels coalesced with them to a large extent, especially when Goidel and Pict were confronted by their common enemy, the Brython. Indeed, the term Goidelic should strictly be confined to the mixed population of Aryan and non-Aryan language in possession of the country when the Brythons arrived.

It is natural to inquire when metal was first worked in our islands, and who introduced the new art. Copper and bronze objects first appear in the Round barrows, often in association with beakers or drinking-cups of pottery : and the beaker-people are inevitably connected with the round-headed invaders, who probably came from several points beyond the North Sea. But there is only one admitted beaker-find in Ireland, whereas the earliest forms both in copper and bronze are there abundant. At present, therefore, it would be unwise to give all the credit to the beaker-people ; and even if they were the first to work metal in Britain, they are not proved to have invented the art. The only safe conclusion is that metal came into common use soon after the brachycephalic population arrived ; with the exception

of gold, it has never been found in primary burials of the chambered or Long barrows.

It was pointed out by Sir John Lubbock (later Lord Avebury) that what is recorded of the Phoenicians in the Mediterranean affords a clue to the earliest date of metal-working in this country. Strabo (54 B.C.-A.D. 24) expressly says that in early times the Phoenicians carried on the tin trade from Cadiz, and this port was perhaps founded by them (not later than 1100 B.C.) partly for the trade with Cornwall, to which it was nearer than to Tyre or Sidon. Sir John Evans concurred in the view that between 1500 B.C. and 1200 B.C. the Phoenicians were already acquainted with the mineral fields of Britain, bronze having been known in Egypt long before that date; and he added that the use of tin, and probably also of copper, would date back in Britain to a still earlier epoch. The Phoenicians, or those who traded with them, would not land in Britain and discover tin spontaneously; it must have been a knowledge that the inhabitants of Britain were already producers of this valuable metal that originated the commerce.

That tin or copper was worked here before 2000 B.C. is, however, very improbable, though one school of archaeologists in Scandinavia, while allowing that metal was known earlier in this country than in their own, place the beginning of their Bronze Age about 1800 B.C., and the use of copper still earlier, in the neolithic period. Another view is that bronze was introduced about five centuries later, the Bronze Age in Scandinavia lasting from about the fifteenth to the fourth century B.C. If 1800 B.C. is a possible date for Sweden and Denmark, it is a probable one for our islands.

There is sufficient evidence to show that cremation was not generally practised before 1000 B.C., though it appeared earlier in the south of Europe than in the north, and was also characteristic of the Aryan peoples. An interval of a century or two is thus provided for the interments that show contemporary burials by both cremation and inhumation. The former method is known to have lasted in some parts into Roman times, while it helps to explain why burials of the later Bronze period are unproductive of metallic objects. It may have been a change of belief as to the spirit-world, or economy of the still precious metal, that resulted in the abolition of all furniture from Bronze Age graves after the change of rite; and the large number of cinerary urns discovered and preserved possibly represent the period during which swords and spear-heads of bronze were manufactured and carried by our population.

The elements of that population have already been indicated, but something must be said as to the immediate source of the Bronze culture in these islands. In the description of the Cases,

forms will be noticed which appear to belong for the most part to certain definite localities abroad, and though such finds are rare in Britain, they throw some light on our early connexions with the Continent. Again, the halbert, which can be approximately dated in Spain, is well represented in Ireland, and specimens are also known from Britain and certain other parts of Europe, referable in all cases to the Copper or early Bronze Age. On other grounds it seems likely that while Ireland derived its earliest bronze or copper forms from the Mediterranean by way of Spain, Britain in the Bronze period was more closely connected with the north of France, which was in its turn supplied to a certain extent from Italy through the passes of the Alps and by sea to Marseilles. A map prepared by the Hon. John (now Lord) Abercromby shows that the 'drinking-cup' or beaker, the earliest well-defined type of Barrow pottery in this country, occurs uniformly on the east coasts of Scotland and North England, though many have come to light in the south-west of Scotland, and there are clusters also in Derbyshire and Wilts. ; and it may be inferred that these vessels were introduced from Scandinavia or the Netherlands by a people scarcely acquainted with metals. Whether these new-comers can be identified with any race of which we find linguistic traces cannot be affirmed, but that they arrived before the Aryans seems the most probable hypothesis. The Aryans, who are credited with the introduction of cremation into Europe, are now thought to have found the art of metal-working already established in certain parts, and to have actually retarded civilization in the districts they appropriated. Such a view would suit the conditions in our islands very well ; and if 1000 B.C. be taken as a central date for the earliest cremation urns in the barrows, we may assign the beakers and those food-vessels found with unburnt burials, and frequently with bronze objects, to the pre-Aryan population, in part descended from our remoter neolithic ancestors.

As, in the foregoing pages, mention has been made of a chronological system in connexion with prehistoric objects, it may be well to explain in a few words the method by which it has been possible to establish anything like absolute dates for the antiquities of the Bronze Age a method which is principally associated with the name of Professor Oscar Montelius, of Stockholm.

The attempt to assign absolute dates to objects earlier than any historical records is based upon the previous establishment of a *relative* chronology obtained through a classification by sequence of types. It is found that the bronze antiquities of almost any country can be divided into a number of consecutive series in which the development of types of different objects, especially axe-heads and brooches, can be clearly traced. It is further found that the characteristic types of one series are hardly ever associated

with those of another, and that the only objects which overlap are those late in one series and early in the next: a type of the earliest series, for example, will never be found in the same tomb or deposit with one of the third, or a type of the second with one of the fourth. From this it may be safely inferred that the period covered by each series must have lasted long enough to displace the types of that which preceded it, and its duration is therefore assumed to have been not less than about a century and a half, though it may have been longer.

Sometimes, however, the date of a later series can be exactly determined, because the objects which compose it occur with types also found in Central Europe and Italy, and these in their turn come into contact with the old historical civilization of which the dates are known. For example, a certain form of hammered bronze vessel found in Etruscan tombs at Bologna also occurs in various parts of Germany, Denmark, and Sweden, with objects assigned to the tenth century before Christ, as a mean date. Bronzes of this kind give a date to their group and supply a fixed point from which that of the earlier series can be estimated: by such means the beginning of the Bronze Age in Northern Europe has been carried back to about 1800 B.C.

The weak point of the method is that though the dates of the later divisions may be regarded as certain, those of the earlier become more and more vague as the remotest period is approached; for the objects which can be brought into relation with the early civilizations diminish in number as the scale is ascended: the higher limit is therefore not a fixed but a wavering line, which may have to be constantly redrawn in the light of increasing knowledge. Some periods, too, must have been longer than others, and it is very hard to say what their average length should be. But in spite of these inevitable drawbacks the system may be relied on within a few centuries even for the higher limit, while it yields exact results for the lower: a greater precision than this we can scarcely expect to achieve. To possess anything in the nature of a date to fall back upon in the study of prehistoric antiquities is a distinct aid to the memory, and even the most provisional of methods may be of great temporary use to the student, provided he never forgets that it is constantly liable to revision.

Opportunities for giving an absolute date to prehistoric objects of the Bronze Age within the Mediterranean area are more frequent than in the case of those from the north of the Alps, because inscribed Egyptian scarabs belonging to particular dynasties are occasionally found with them, or because they themselves occur in Egyptian tombs of known antiquity. Certain phases of the Aegean culture known as Mycenaean, and the Minoan of Crete which preceded it, have been dated in this way. Scarabs

of Amenhetep III and Thii (about 1400 B.C.) have been found at Mycenae and Ialysos; scarabs of 2500-2000 B.C. have occurred among early Minoan remains at Hagios Onouphrios in Crete, while Mycenaean and Minoan pottery has been excavated from various Egyptian sites dating from about 1200 back to the twelfth Egyptian dynasty (about 2000). From facts like these, clues are obtained which are of great assistance in the difficult task of bringing prehistory and history into relation with each other and co-ordinating our knowledge of contemporary but dissimilar cultures in very early times.

## DESCRIPTION OF CASES

### BRITISH ISLES

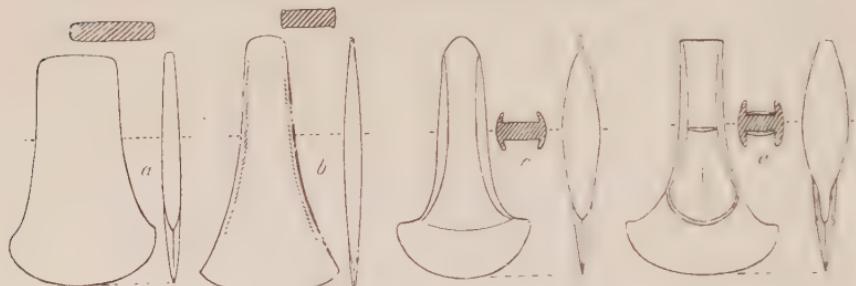
THE incorporation of the Greenwell collection of bronzes has made it possible to exhibit in the central cases of the Saloon a sufficient number of each of the principal Bronze Age types to show their evolution, and groups of contemporary objects such as hoards and burial deposits will serve to show what stage in each process had been reached at any given date; but many more intact deposits must be found before we can approach the precision reached in the Scandinavian countries.

A beginning may be made with the commonest implement of the period, which varied in form, but was normally used as an axe. The derivation of its name from a supposed Latin word, *celtis*, has been already mentioned (p. 13). It applies also to stone specimens, and though there are other objections to the word *celt*, it is too late to suggest another name for this kind of implement. The type-series is exhibited in one compartment of the central table-case P, in what is taken to be the chronological order, though the palstaves and socketed celts run on parallel lines, both being derived from the flanged variety, and having a common ancestry in the first row of fig. 3.

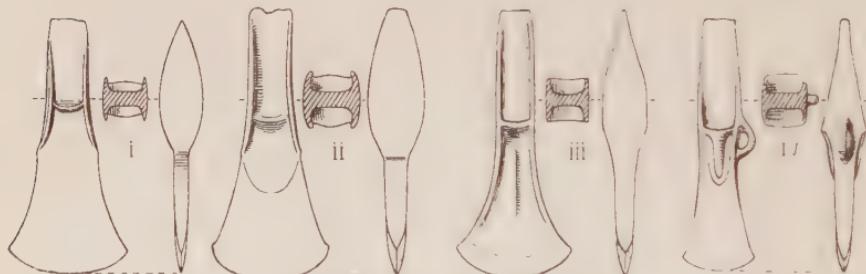
The earliest celts are evidently metal copies of the commonest stone implement of the neolithic period, and have convex faces which are, perhaps, best illustrated by the Butterwick example (fig. 76), but may be represented here by fig. 3, *a*. It was subsequently found that the same purpose could be served by reducing the width of the celt, and the hammering necessary to harden the edge resulted in an expansion of this part of the implement (*b*). The form of haft in use at that time no doubt resembled that of the neolithic period found in Solway Moss and exhibited in Case B; but it was found in practice that the axe-head could be fixed more firmly in a cleft stick (fig. 4) by beating up the edges into flanges (*c*), and by providing a transverse rib about halfway down each face to prevent the head splitting the handle when in use. These improvements are seen on the flanged celt with slight stop-ridge (*d*), and were in some cases gradually accentuated, till the flanges became shorter (*i*, *ii*) and the stop-ridge merged into them (*iii*). Meanwhile, that part of the celt covered by the prongs of the handle was made thinner to economize the metal,

and comparatively deep grooves were thus provided for the reception of the handle, which was at first secured by binding and later by the addition of a loop, through which a cord passed behind the angle of the haft (Case A). This form is generally known as the

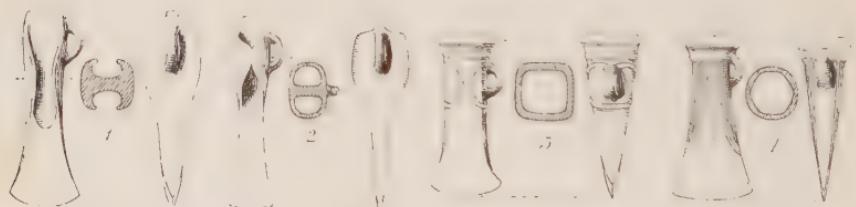
FIG. 3.—STAGES IN EVOLUTION OF THE CELT.



From stone to metallic form.



Growth of the stop-ridge.



Growth of the wings.

palstave (iii, iv), an Icelandic word which, in modern times, denotes a narrow spade or spud used in agriculture.

As the hoards show, this form of celt was in use down to the end of the Bronze Age, but there was a contemporary form derived ultimately from the same original, though by different stages. The socketed celt, perhaps the commonest form in these

islands, was in all probability due to a continental development of the flanges at the expense of the stop-ridge. Thus in no. 1 the prongs of the handle would be held firmly enough by the arched wings that nearly meet midway between the butt and cutting edge. What is apparently a later form (2) has the wings nearer the butt and a loop added at the side for further security. With the increase of the wings a central partition or septum was no longer necessary, and disappeared when the socketed celt was rendered possible by the introduction of core-casting. The transition is marked by specimens (3) which are ornamented with crescents recalling the outline of the wings; and the later forms (3, 4), with the opening square or angular instead of oval, are merely local varieties, found more often in England than in Ireland.



FIG. 4.—Handle of celt, with method of hafting, Hallein, Salzburg, Austria.

In one section of Case A (north-west corner of the adjoining Prehistoric Room) are models showing the various methods of hafting metallic celts. The illustration of an original handle (fig. 4) for a winged celt or palstave shows the use of the prong; and the method of securing the head by a ligature through the loop may be seen in other examples. A palstave with haft in the same straight line has been found in Denmark (p. 132).

In the adjoining section of Case P are examples of the halbert-blade (fig. 5), one of the earliest weapons to be made in metal. They are specially common in Ireland, and are found abroad in Spain (fig. 160), north of the Pyrenees, in Italy (Cremona, Case C), Germany (fig. 147), and southern Scandinavia. Wherever found, the metal of these weapons is generally copper or bronze poor in tin, and everything points to a very early date, known in some countries as the Copper Age, in others (as Italy) by the name aeneolithic (better chalcolithic), or transition from stone to bronze,

perhaps before 2000 B.C. Halberts only bear out the view based on the abundance of flat copper celts in the island that metal-working flourished in Ireland as early as in any other country of north or west Europe; and the reason may probably be found in the local abundance of gold (p. 108).

The subject was investigated by the late Mr. Coffey, who pointed out that halberts can generally be distinguished from daggers by their scythe-like curve, massive character, straight markings from contact with the handle, and the grouping and lengths of the rivets, those at the extremity being generally shorter than the others, as would be required by a shaft of cir-



FIG. 5.—Halberd-blade, Slieve Kileta Hill, co. Wexford.  $\frac{1}{4}$



FIG. 6.—Halberd-blade of rare type, Ireland.  $\frac{1}{3}$

cular or oval section. Reference is made to rock-markings of this character in the Maritime Alps (p. 145), and the deer-antler pick of neolithic times is suggested as the original model of the halberd.

The question of priority is still an open one, but if the Spanish series be considered earlier than the Irish, it must be allowed that the German are later, as these have the shaft encased in metal castings and the head cast in one piece with the top of the shaft, the rivets becoming merely ornamental (fig. 147).

Two examples of a rare type are exhibited, one being said to come from Ireland (fig. 6), and there is no reason for placing these halberts anywhere but in the early Age of Bronze. One of this peculiar form has been found at Gambara, Brescia, but has been regarded as unique in Italy, and it is interesting to note

that this and the more usual form of halbert are common to Ireland and Italy.

Halberts have been found in Ireland with late copper celts (Birr, King's co.), and are apparently earlier than the spear-head, which was also a dagger mounted on a shaft, but in the same line and not at right angles like the halbert. The discovery of a halbert and dagger together at Wrexham, Denbighshire, shows that these two forms of the metal blade were contemporary ; and specimens from Sproughton, Suffolk ; the Thames at Hammer-smith ; and the Tyne at Elswick are late forms of the halbert, if not actual daggers, with the longest of the three large rivets at the extremity, unlike the Irish type ; nor does the curved type of halbert appear to be found in Britain. An early form of dagger, with triangular blade, suggesting a connexion with Spain, comes with a bone pin of elaborate pattern from an unburnt burial at Brough, E. R. Yorks., and the marks of the overlapping handle are still visible, showing a semicircular hollow at the junction (as fig. 11). A complete dagger with metal handle (fig. 7) has been found in the Thames, and will serve to show the original appearance of these weapons, some of which have also been found with metal handles in Ireland. One similar to this but with an ivory handle was found with two small spear-heads and burnt bones covered by a cinerary urn in a barrow near Blandford, presumably, therefore, of the later Bronze Age.

In the halbert and rapier heavy rivets were necessary on account of the leverage, but daggers were attached to their grips less firmly, and the rivets often had domed heads, more for ornament than use.

Dagger-blades are numerous, and the collection includes some excellent specimens of casting, the acme being reached in certain of the rapiers, which are merely elongated daggers, but require a higher degree of skill in manufacture. Without associated objects it is difficult to arrange these blades chronologically, but, broadly speaking, those with curved butts (fig. 8) are earlier than those with narrower and spade-shaped butts (fig. 9). Professor Montelius, in dealing with the Bronze Age in France, places the former in his second period (1850-1550 B.C.) and the latter in period three (1550-1300 B.C.).

It is sometimes difficult to distinguish between a dagger and a knife, and some of the specimens exhibited may have been used for either purpose ; but early blades sometimes found in round barrows are more likely to be knives, and a few of them have rounded points not suitable for piercing (fig. 90). Owing to wear, accident, or imperfect casting, the rivet-holes are often incomplete, and form notches round the edge of the expanded butt. The outline of the handle where it gripped the blade can seldom be traced, but is visible on one blade of rapier type with two stout

rivets, from the Thames at Mortlake, and on a dagger from a barrow near Beedon, Berks., besides that already mentioned from Brough, E. R. Yorks. Ribs and bevelled edges are normal on the rapiers, but ornament is rare on daggers, which contrast in this respect with the complete specimen from the Thames.

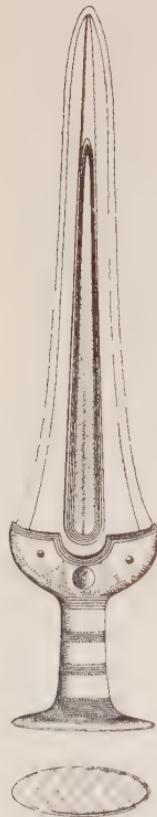


FIG. 7.—Ornamented dagger, Thames.  $\frac{1}{4}$



FIG. 8.—Dagger-blade, Thames at Thames Ditton.  $\frac{1}{3}$

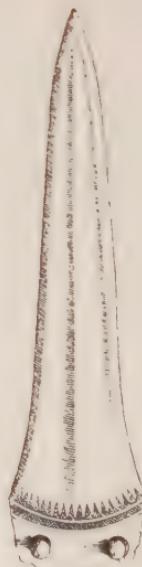


FIG. 9.—Dagger-blade, Thames at Richmond.  $\frac{1}{3}$

As the longer weapon a rapier is normally provided with two or three stout rivets spread by hammering at both ends, and many specimens have more or less circular notches for rivets, giving the butt-end an irregular outline. A fine specimen with golden

patina from the Thames at Kingston is exceptional on account of its long narrow tang without a rivet-hole. Some specimens are extremely long (plate II, no. 4), others unnecessarily broad, as one from Kimberley, Norfolk, which is, however, small in comparison with what must have been a ceremonial weapon, from the Côte-d'Or, France (Case E). The technical difficulties in producing castings of such length are considerable, and the artificers who surmounted them were evidently masters of their craft. In date rapiers as a class come between the halberts and the swords, the latter being a late invention of the Bronze Age and surviving into

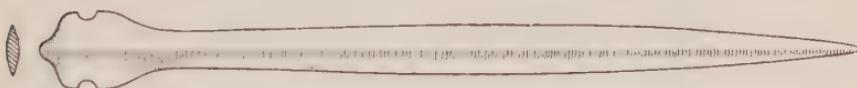
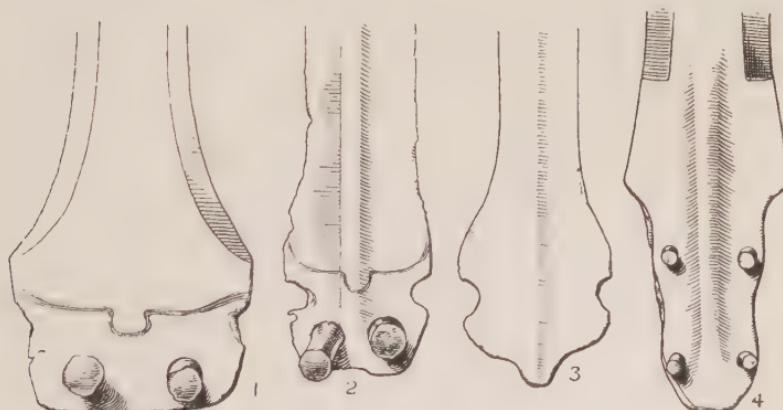


FIG. 10.—Bronze blade, Nannmor, Beddgelert, Carnarvonshire.  $\frac{1}{4}$



Thames, Mortlake.      No locality.      Beddgelert.      Ouse near Ely.

FIG. 11.—Arrangement of rivets on rapier and sword.  $\frac{1}{2}$

the Early Iron Age. The Museum has recently been presented with a Welsh specimen (fig. 10) that seems to represent the missing link between rapier and sword, and partakes of the character of both. As a casting it is not worthy of comparison with the early rapiers, but the double curve of the blade foreshadows the leaf-shaped sword so fully represented in the adjoining table-case. The central rib has almost disappeared, and instead of rivet-holes in the butt there are two lateral notches (fig. 11, no. 3).

Whereas in Britain and Europe generally the bronze sword is considered a not very remote ancestor of the Hallstatt iron type, it should be remarked that in Denmark associated finds put some

imported and native weapons of this type into the early Bronze Age (before 1000 B.C.); and the period necessary for the development of several varieties must be reckoned in centuries. Professor Montelius, for instance, places the rapier with spade-shaped butt in his third French period (1550-1300 B.C.), and the sword in his fourth (1300-1050 B.C.) and fifth periods (1050-850 B.C.).

Some idea of the complete sword can be gained from the cast exhibited here of a specimen found in Yorkshire. The original has evidently been moulded after a leaf-shaped sword like some in this Case, which had horn or bone plates attached by rivets to either side of the handle, and a heavy pommel of some kind, probably globular. Two swords have indeed been found in Northumberland with remains of leaden pommels of this shape, and some of those exhibited would be very ill-balanced weapons without such a counterpoise. How this was attached to the common expanded termination of the handle may be seen in the Tarves sword (fig. 105), which only lacks the plates of the grip.

There are various opinions with regard to the original home of the bronze sword, but there is some evidence that northern Europe imported and copied the products of northern Italy; and, although associated finds give little assistance in the British Isles, a sequence may be attempted and chronological limits determined. The Welsh specimen (fig. 10) is an unpretentious weapon with the faces of the blades regularly convex, without mouldings or bevelled edges; and if that marks the transition from rapier to sword, it is reasonable to consider swords with similar blades as the earliest of their class. But in Case Q are exhibited some half dozen specimens (all from the Thames except one from the Ouse near Ely) of what may be the original form of the sword. In Case P are several blades with oblong tangs having two rivets at the end and two notches for another pair above (fig. 11); and the swords in question had three or four rivets similarly placed (as pl. II, no. 7), not only in British but in French examples (fig. 137). The blades are rather massive, with almost a lozenge section, and rarely of the true leaf-shaped outline.

Leaf-shaped blades are often associated with tangs having parallel and flanged edges, with rivets or rivet-holes for attaching horn or wood for the grip. In Denmark, at least, the earliest swords, which are of Italian pattern (not leaf-shaped as in this country), have pronounced flanges on oblong tangs, and date some centuries before 1000 B.C. A good example from Battle, Sussex (pl. II, no. 5), is, therefore, probably earlier than no. 6, which is barely flanged and, moreover, has rudimentary shoulders which are accentuated later. Further, there is a tendency in the tang to taper towards the pommel, and no. 2 may be placed soon after no. 6. The slot, instead of a series of round holes for the rivets,

0 1 2 3 in.

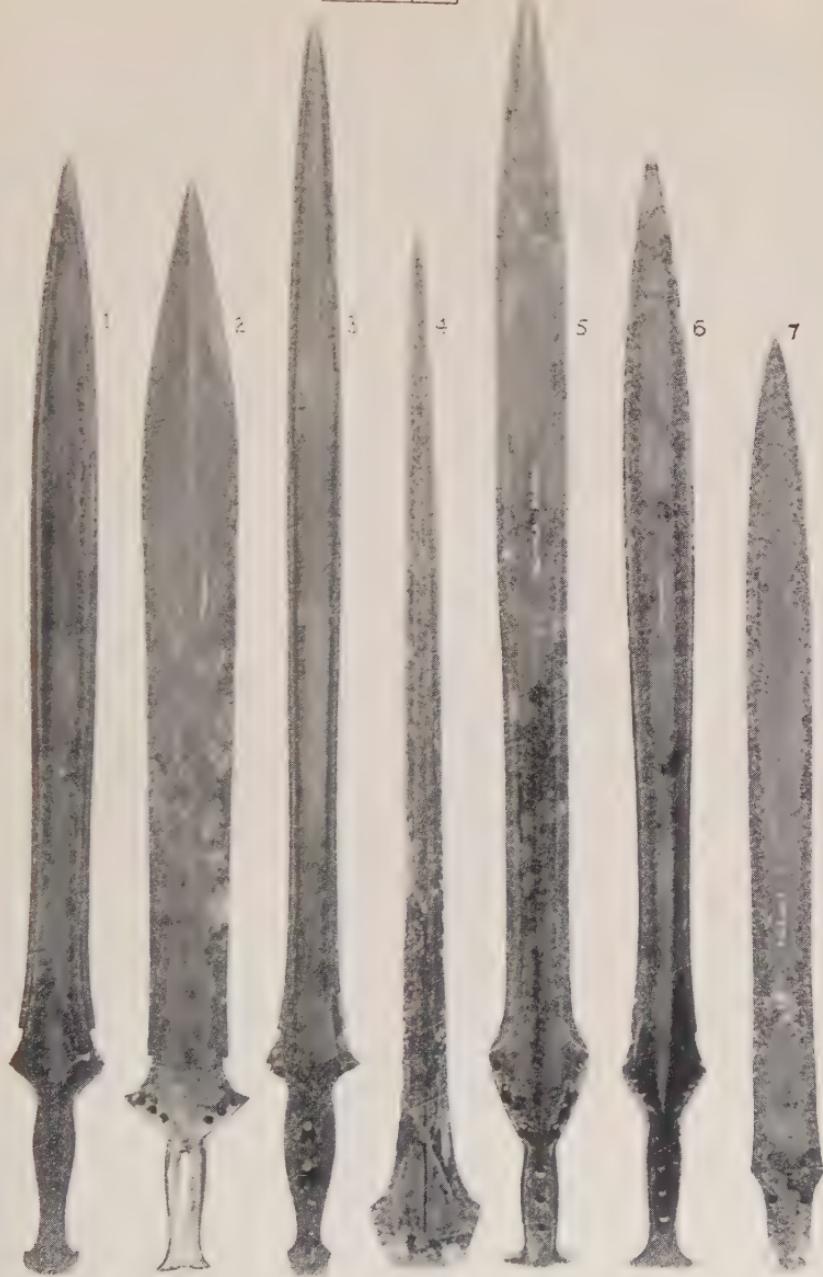


PLATE II. SWORDS AND RAPIER, BRITISH ISLES.  
(Cases P, Q, *see pp. 31, 32*)



is common in our islands, and occurs less frequently in the Somme valley. Nos. 1 and 3 illustrate the early Hallstatt type, with characteristic tang, pommel, and shoulders on the blade, and are assigned by most authorities to about 900 B.C. A certain fulness may be noted in most instances on the middle line at the base of the blade, which is naturally the weakest part of the weapon.

The chapes or scabbard-tips, also shown from the Thames, belonged to leaf-shaped swords and not to daggers, to which their actual length rather corresponds. The greater part of the blade was protected by wood or leather, which passed inside the chape

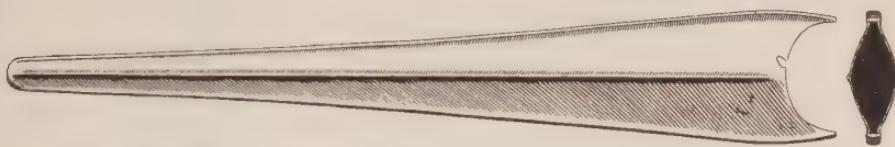


FIG. 12.—Chape of sword-sheath, Thames at Amerden, Bucks.  $\frac{1}{3}$



FIG. 13.—Chape of sword-sheath, Thame.  $\frac{1}{2}$

and was affixed to it by means of rivets, while the point of the weapon in no case seems to have reached the end of the sheath. Wooden scabbards without metal chapes found in Denmark are also considerably longer than the blade. The metal chapes are cast in one piece, and the uniform thinness of the metal points to great skill in casting. Most have a curved outline (fig. 12), but one found with the buckler in the Isis near Dorchester, Oxon., has straight tapering sides, while the winged or boat-shaped specimens (fig. 13) are assigned abroad to the Hallstatt period (barely represented in Britain). This form eventually assumed extraordinary proportions in France, and one has actually been found on the end of an iron sword. Simpler forms of the winged type occur in England and Ireland; and the tapering pattern, which is

seen to be frequently found in the Thames, is also known from Scotland and Ireland, smaller examples occurring in the north of France (p. 125), and being perhaps derived from the English type.

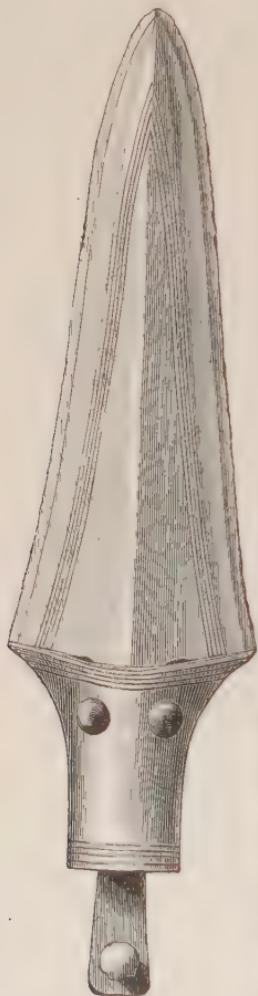


FIG. 14.—Dagger, barrow at Snowhill, Glouce.  $\frac{1}{2}$



FIG. 15.—Tanged dagger, Hintlesham, Suffolk.  $\frac{1}{2}$

The spear-head is another descendant of the dagger, and its evolution is best illustrated by finds in the British Isles. The first step was to insert a narrow tang into the shaft, which was prevented from splitting by the addition of a bronze collar; and a crucial instance is the Snowhill find (fig. 14). Here a com-

parative date is given by associated finds in an unburnt burial (on the northern boundary of Gloucestershire), and the use of similar blades with tang and single rivet explained (fig. 15). The plain collar that no doubt encircled the shaft and tang in these cases became a trumpet-shaped socket in the Snowhill specimen, attached by two rivets passing through an expanded tang. The shaft was forked to accommodate the tang, and the period is indicated by the flanged celt included in the Arreton Down hoard. The next stage is illustrated by a specimen from the same hoard

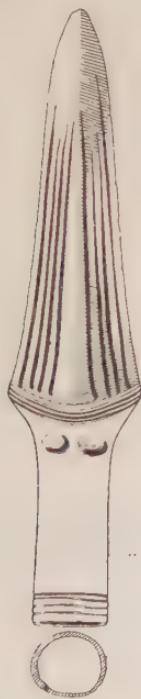


FIG. 16.—Socketed spear-head, Arreton Down, I.W.  $\frac{1}{3}$



FIG. 17.—Spear-head, probably from Ireland.  $\frac{1}{2}$



FIG. 18.—Spear-head, Ireland.  $\frac{1}{2}$

(fig. 16); and by one from Ireland (fig. 17), which has a socket nearly the same length as the blade, and two bosses representing the pair of rivets in the Snowhill specimen. This figure also shows the beginning of the loops, near the end of the socket, for securing the head to the shaft by means of a thong. In the course of development these loops gradually move up towards the base of the blade (figs. 18-20), and eventually become openings in the blades themselves, either near their base or about the middle. In the later stages these openings vary in size and outline, and

may have served to reduce the weight of metal. It is, however, by no means improbable that the openings in the blade were due in the first place to imitation of an early form of spear-head found in the second city at Hissarlik (2500-2000 B.C.) and in the Greek Islands, where the flat blade was inserted in a cleft stick bound by a cord passing through the openings (fig. 173). This type may well have been transmitted by sea from the Eastern Mediterranean early in the Bronze Age.

The blade also underwent progressive changes, and fig. 18 shows an advance on fig. 17. The socket, instead of stopping

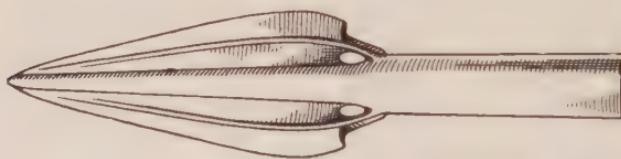


FIG. 19.—Spear-head, Elford, Northumberland.  $\frac{1}{3}$

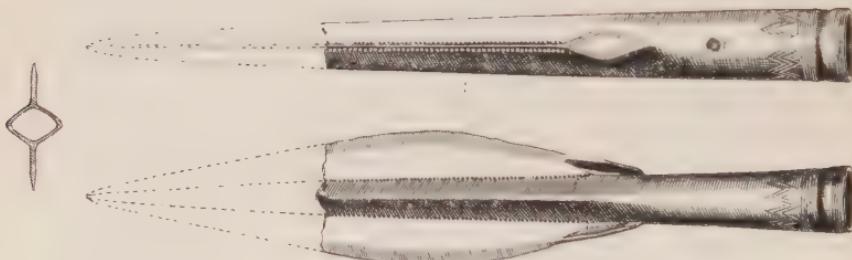


FIG. 20.—Spear-head, Brigmerston Down, Wilts.  $\frac{1}{3}$

short at the base of the blade, is continued inside the central rib about half-way to point, and converging ribs replace the finely engraved lines that ornament some earlier specimens. This variety is common in Ireland and is generally small; but longer specimens (as figs. 19, 20) begin as soon as the loops reach the blade, and the collection fully illustrates the various advances made in casting. The socket was itself a triumph of craftsmanship, and was produced by means of a clay core in the mould (p. 112), kept in place by a pin fitting into notches of the stone (fig. 122); but even when the socket reached the point, progress was still possible in economizing metal, the result being that the hollow of the central rib spread into the blade, and at last the spear-head became a mere shell (fig. 21), with a lozenge section, in

contrast to that of fig. 20, which has thin blades abutting on an angular rib.

The loops are often flattened out to form a lozenge-shaped plate, and are known as 'protected loops' when they pass with these plates into the blade (fig. 22). By this time the loops had lost their function, and the head was secured to the spear-shaft by

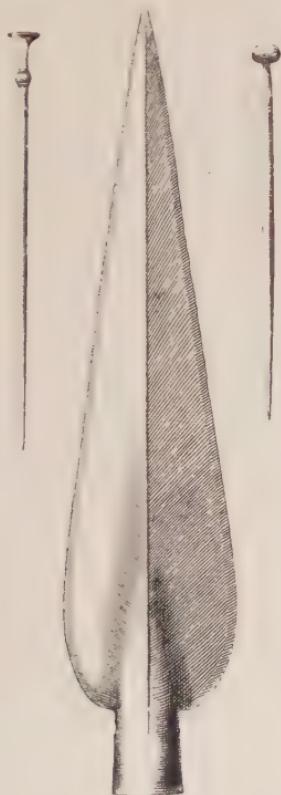


FIG. 21.—Spear-head and pins.  
Fenny Bentley, Derbyshire.  $\frac{1}{3}$

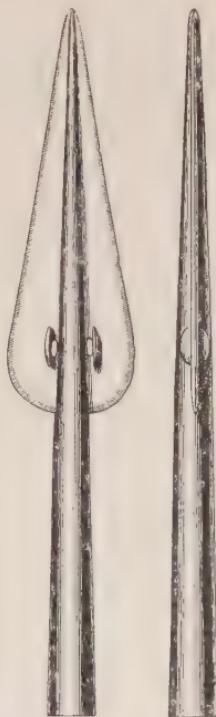


FIG. 22.—Perforated spear-head, Thames.  $\frac{1}{4}$

a pin of metal or wood passing through two holes in the socket in the plane of the blade (as fig. 26). Occasionally a pin was inserted at right angles in the socket of a looped spear-head; and it was pointed out by the late Canon Greenwell and Mr. Parker Brewis, F.S.A., that some of the earliest spear-heads were attached by a pin, before loops came into use (fig. 14). In their opinion the later leaf-shaped type (fig. 23) attached by a pin through the socket was in use longer than any other. 'It is, moreover, essentially the type which almost exclusively prevailed in all

other countries where a bronze spear-head existed. It was not, however, in these countries the product of an evolution through other forms, but seems to have made its appearance there when in a perfected state. This fact, which cannot be controverted, may perhaps claim for Great Britain and Ireland that not only did the socketed head originate here independently, but further, that from us it passed into those countries of Europe and elsewhere where it has been found.'

The spear-heads in Table-case O are arranged in chronological



FIG. 23.—Spear head, Thames at Thames Ditton.  $\frac{1}{2}$

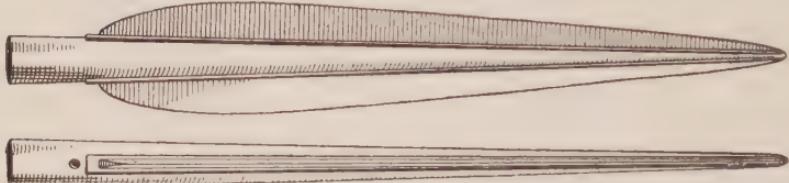


FIG. 24.—Spear-head with lateral fillets, Thames.  $\frac{1}{4}$



FIG. 25.—Spear-head with gold studs, Thames at Taplow. (L.  $17\frac{1}{4}$  in.)

order, beginning at the south-west section and ending at the north-west.

All gradations from the angular to the leaf-shape are here exemplified, but some types and details seem to lie out of the main line of development. There is sometimes a lateral band on either side of the socket, above or including the pin-holes, that runs along the central rib to the point and forms a moulding between the rib and the blade (fig. 24). It is rather surprising that the rapier outline should be rare among the spear-heads, considering the close relation between the rapier, the dagger, and the spear; but a splendid example is here illustrated, with conical rivet-heads of gold in the wings of the blade. The socket is imperfect, and one loop has been restored in the drawing (fig. 25).

Another form that seems to have a different pedigree is barbed (fig. 26), sometimes with a bronze pin remaining in the socket, and generally with the hollow of the socket extending into the blade. The edges are parallel almost to the point, and the type is perhaps traceable to specimens with very narrow blades like those from South Brent, Devon, and Hatfield Broad Oak, Essex. The socket is in this type frequently oval, a feature that is rare in other patterns. Part of the Broadness (Kent) hoard shows objects dredged at the same time and place, and barbed specimens are also shown from Plaistow, Essex; Ferriby, E. Riding, Yorks.; the Thames near Kingston; and in the hoard from Broadward, Shropshire (Case 60).

Reference has already been made to the bronze hoard discovered on Arreton Down, Isle of Wight, in 1735; and it is of capital importance as showing that flanged celts with slight stop-ridge were in use when the spear-head was evolved from the dagger. Sixteen implements in all were found 1 ft. below the surface,



FIG. 26.—Spear-head with bronze pin, Plaistow, Essex.  $\frac{1}{3}$

the celts laid in order on the tanged weapons, which are rudimentary spear-heads. They are exhibited on a board round the corner of Case 56. Several examples (fig. 15) have been found since, chiefly in the south of England (Case O), and one is said to have come from Italy; but they may be regarded as a local adaptation of the riveted knife-dagger, a decorated example of which was also found on Arreton Down. In 1868 sixteen celts, three daggers, another two-edged weapon, and a chisel, were found piled upon a ledge of rock under a heavy stone slab 2 ft. below the surface in a field at Plymstock, Devon (fig. 27). The close resemblance to the Isle of Wight specimens will be noticed, and the relative date is confirmed by the flanged celts. The Snowhill burial mentioned above was primary, and by inhumation, containing also a knife-dagger with rivets, a bronze pin, and a stone axe-hammer (figs. 14, 28). A tanged knife from Sutton Courtney, Berks., perhaps represents an earlier stage of development, and belongs to a type occasionally found in barrows.

Fragments of spear-heads are often found in hoards, but scrap-metal may be of many periods, and only a few cases are known

in Britain of contemporary groups including undamaged spears. Such finds give a clue to the dates of various stages in development, and it is significant that no socketed implements of any kind occur in Bronze Age burials, the inference being that

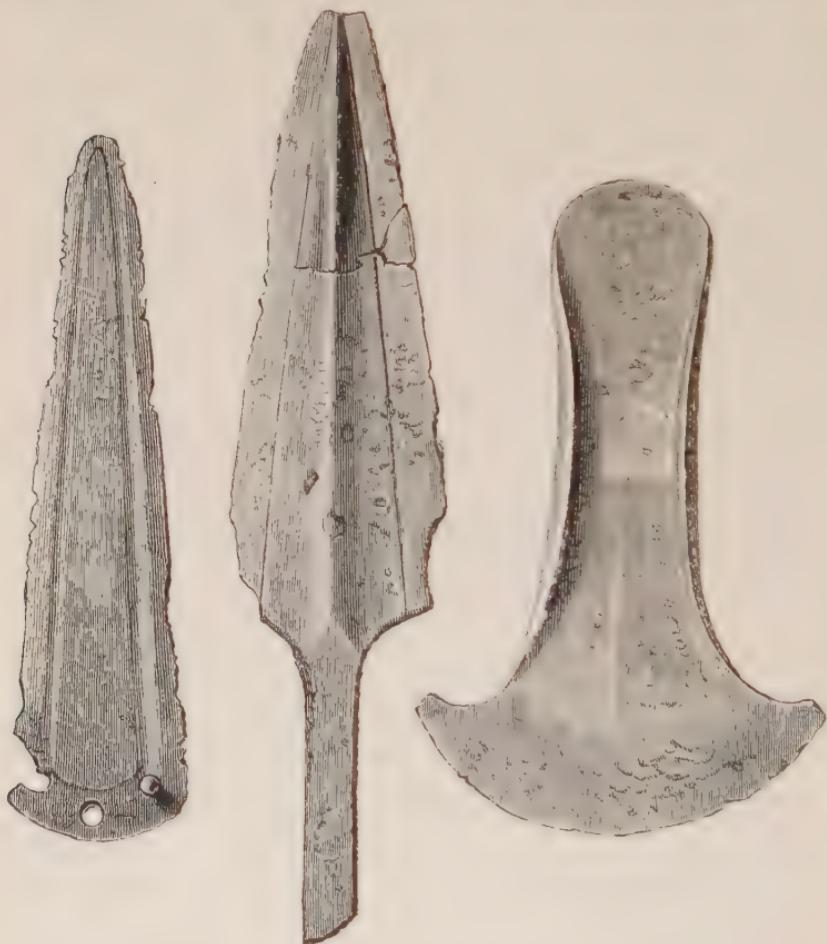


FIG. 27.—Part of hoard, Plymstock, Devon.  $\frac{2}{3}$

cremation had come into fashion (p. 21) before the true socket was invented.

Three rapiers from Maentwrog, Merionethshire, suggest an early date for the spear-head associated with them (fig. 29), but the loops have already reached the base of the blade.

The hoard from Stibbard, Norfolk (fig. 30), contains eight palstaves (six from one mould, two from another) and a spear-head evidently newly cast, as the seam, which runs over the lozenge

plates of the loops, has not been filed down. The middle rib is well made and the blade is thin and bevelled, so that the specimen is probably earlier than one of the same type in the Nettleham hoard from Lincolnshire (fig. 31). This comprised

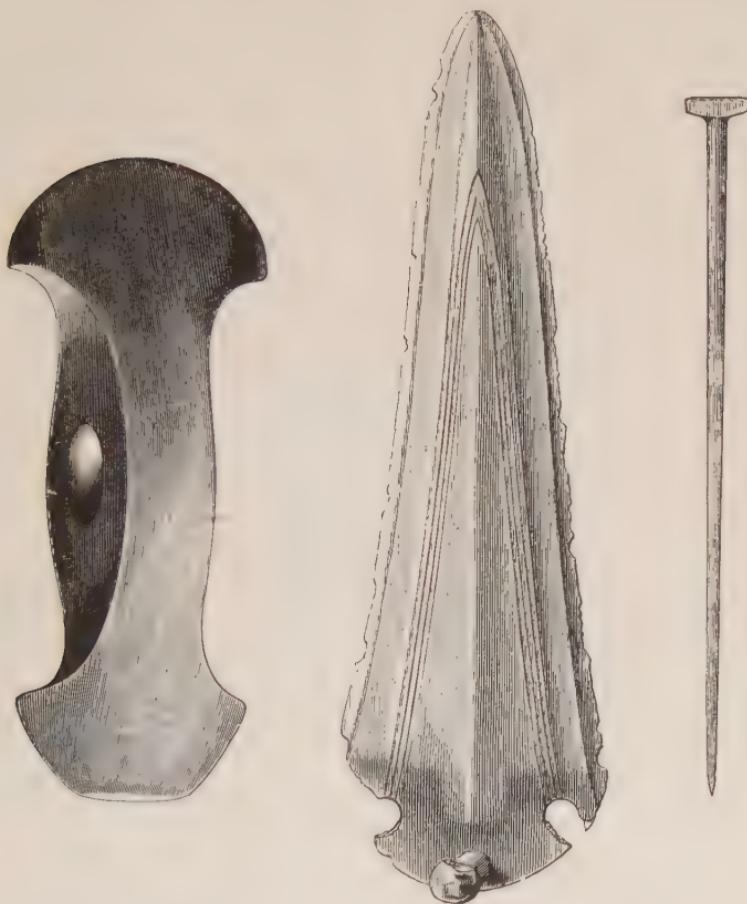


FIG. 28.—Stone axe-hammer, bronze dagger and pin, Snowshill, Gloucestershire (with fig. 14).  $\frac{1}{2}$

a leaf-shaped spear-head with bevelled edges and holes for pin, a cylindrical ferrule probably belonging to the same spear, four very heavy palstaves and two socketed celts with lateral indentations like fig. 53. The three hoards taken together indicate a chronological sequence for the spear-heads, but further evidence is required to eliminate accidental associations.

Before proceeding to describe the smaller groups and isolated

specimens from Britain, it is desirable to notice the bronze bucklers or circular shields exhibited in Cases 93, 98, and 82 (at the head of the main staircase), as the chronology at present rests on their association with spear-heads of a certain type, and two have been selected for the *Frontispiece* (pl. 1). Being of embossed metal, they must have demanded considerable skill on the part

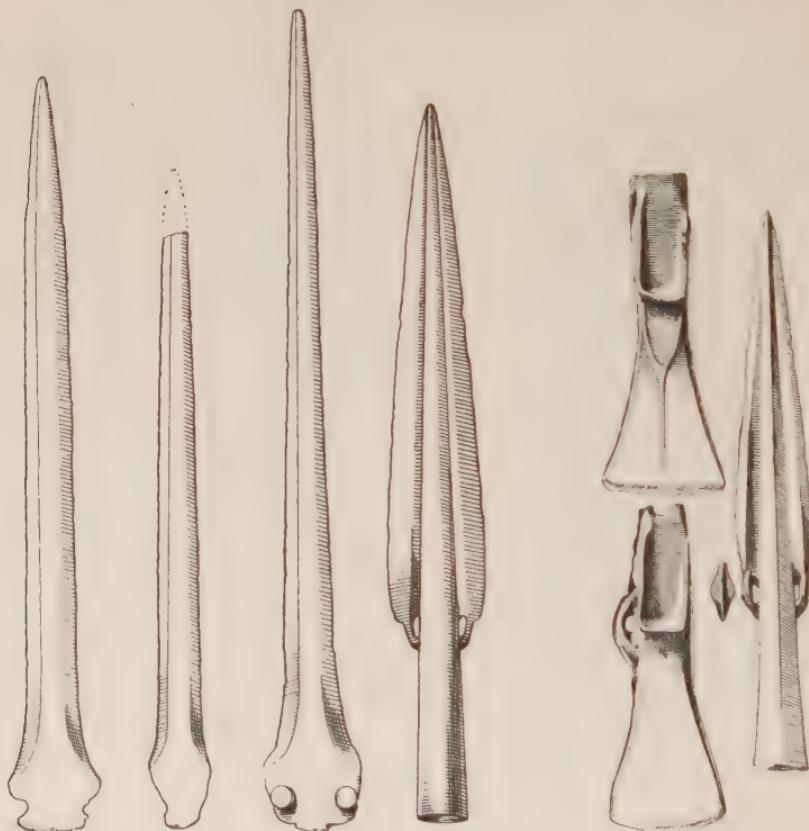


FIG. 29.—Rapiers and spear-head,  
Maentwrog, co. Merioneth.  $\frac{1}{4}$

FIG. 30.—Part of hoard,  
Stibbard, Norfolk.  $\frac{1}{3}$

of the craftsman, and are generally assigned to a late stage of our Bronze Age.

If intended for use in warfare, they would have served perhaps to parry a blow, and would be wielded in the hand, not attached to the arm by straps. The specimen from the Thames at London (no. 1) has four zones of large bosses with a handle behind the central boss; and at the back retains one of the two small metal ears riveted to the disk, evidently for suspension. It is 21 in.

in diameter, whereas one from co. Galway is only 14 in., and its remaining loop would have taken a strap.

Two from Wales, almost a pair, are shown, and the arrangement of the handle is seen at the back, while the small movable tongues of bronze can only have served to attach a wire for hanging the shield. Both are from peat-bogs, one near Aberystwyth, Cardiganshire (pl. 1, 2), and the other at Moel Siabod, near Capel Curig, Carnarvonshire. Three distinct sizes are observable in examples from the British Isles, with diameters of nearly



FIG. 31.—Part of hoard, Nettleham, Lincs. 1

24 in., of 12 to 18 in., and about 9 in. respectively, and all are provided with a central boss to protect the hand. One found at Harlech, Merionethshire, has concentric rings without the embossed knobs, and closely resembles one from Bingen, Rhenish Hesse; whereas examples in Scandinavia not only differ in details from our types, but were mostly imported from Etruria, where several have been found. A buckler found on the island of Falster, however, may have come from Britain, and one of the numerous rock-carvings (fig. 32) on the east coast of the Skager Rak represents a warrior bearing in his left hand a shield which may have been copied from a British original. This is only one of several indications of intercourse between Scandinavia and the British Isles, another being the presence of British celts in

Sweden and Denmark. If the scale can be relied on, the shield in the Swedish rock-carving corresponds in dimensions with that illustrated from Wales,  $26\frac{1}{2}$  in. in diameter; though the ornamentation is more perfectly reproduced in the smaller buckler from the Isis. This has separate rivet-heads in the two zones to fasten the loops and handle respectively, and is nearly the same size as one from a rath in co. Galway (Case 82), which had the four added rivet-heads in the inner zone (p. 105). It will be noticed that the large and small bosses occur on separate examples from the Thames (Case 93), the former being probably the earlier type: and they may have been damaged by spear and sword thrusts. The commonest British form is that with many bands of small bosses separated by raised concentric rings (pl. I. 2), and it should be added that all were no doubt produced from a thicker disk of metal by hammering, there being no indication that the metal was cast in its present form.

The spear-head said to have been found with the small Athenry specimen has not been traced, but at Cambridge is part of a shield from Chatteris in the Fens like pl. I, no. 2, associated with a spear-head  $9\frac{1}{2}$  in. long, having a leaf-shaped blade and protected loops in the base, almost identical with a Thames specimen of golden patina from the Thames in Case O. This suggests a date before the leaf-shaped type without loops, and rather strengthens the connexion between the Brumby Common (Lincs.)

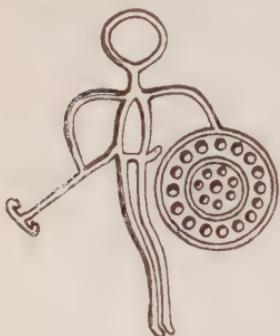


FIG. 32.—Rock-carving,  
Nedre Hede, Quille,  
Bohuslän.

buckler and a spear-head from the same site, like fig. 19.

Many bucklers are from rivers or marshy ground, and, in view of Danish finds, may have been votive offerings. That seems to be the only explanation of the find at Luggtonrigge farm, Ayrshire, where five or six were standing on edge in a circle, deep in a peat-moss. Further, the pairs of small loops still in position at the back of several are riveted so close that nothing but the thinnest plate of metal could have passed between them and the disk. This negatives any idea of a leather or wooden lining, and without such support they would have been of little use in fighting. The damage done to many may have been part of the dedication ceremony.

Deposits of bronzes in the soil or other hiding-place are generally known as 'hoards', and have been divided into three main classes, viz. :—(1) Personal hoards: personal property buried for temporary concealment, but never recovered by the original owner. (2) Merchants' hoards: a stock of implements or weapons



PLATE III. HOARD OF BRONZE, MINSTER, THANET.

(Case 57, see p. 45.)



ready for use and probably carried from place to place by travelling dealers or by the manufacturers themselves. (3) Founders' hoards: broken or disused implements and weapons collected and packed together by travelling tinkers for remelting, as is shown by the frequent occurrence, in this class, of moulds for the manufacture of celts, spear-heads, and other forms.

Hoards are of special importance as showing within certain limits what objects were contemporary, and Sir John Evans drew several conclusions from the study of those found in this country. The chief points are :

1. That flat celts and knife-daggers such as are known from British barrows occur very rarely in hoards.
2. Flanged celts and palstaves are occasionally found together, but palstaves are often found with socketed celts.
3. Tanged implements of any sort are rarely found with socketed specimens.
4. Torcs or twisted collars are more often associated with palstaves than with socketed celts, and are mainly confined to our western counties.
5. Metal moulds and rough lumps of copper are generally associated with socketed celts.

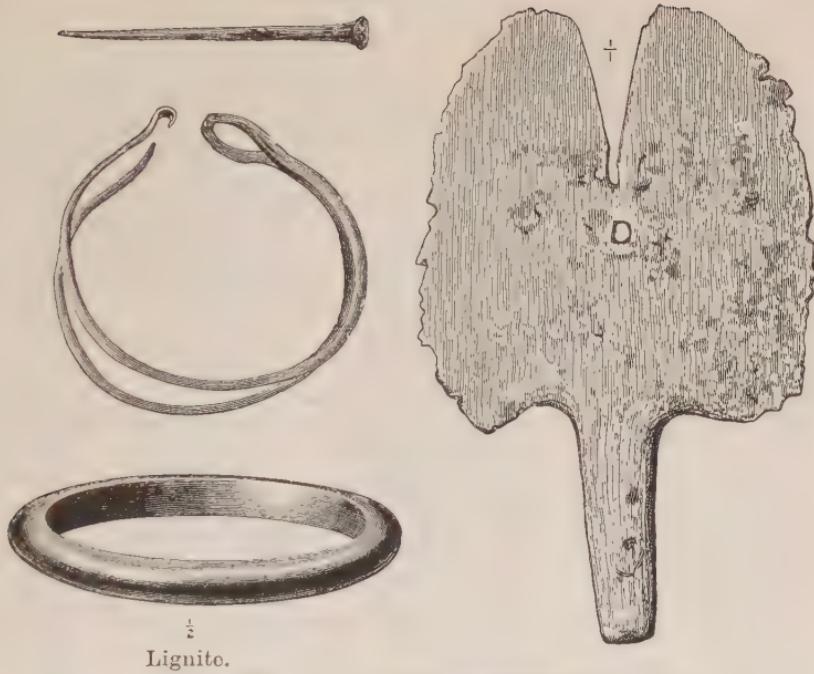
It may be argued from the above that the hoards are, as a class, later than the period of the barrows, and that the socket was recognized universally as an improvement on the tang for the attachment of the handle, though the palstave, which was derived from the winged celt, and is found with the Gaulish torc, was a final form and remained in use as long as the socketed celt. Finally, the use of metal for moulds in place of clay was not possible till the last stage of the Bronze period.

Special attention may be drawn to a series of spear-heads, rings, and fragments of swords from Hampshire, which owe their peculiar colour to burial in peat. They probably form part of the hoard found at Hogmoor in 1870 and described in an appendix to the *Natural History of Selborne*, a peculiar feature being the hacked edges of many of the pieces. The spear-heads are of graceful form and excellent workmanship ; and a chape still contains the tip of a sword. The hoard from Shoebury, Essex, contains two pieces common in Switzerland but practically unknown here : an engraved bracelet, like a gold specimen from Tisbury (fig. 37), and a winged celt of peculiar form, like fig. 124 (right). A socketed chisel, like one from the Thames (Case 52) and the Swiss lake-dwellings (fig. 127), appears in the hoard from Meldreth, Cambs., which also contains part of a cauldron with ring-handle and reeded loop. Knives of hog-back type with a perforation occur at Meldreth ; Bromley-by-Bow, Essex ; Hoo, Kent ; and Minster, Thanet (pl. III). The last locality furnished some peculiar hollow loops, the use of which is not yet ascertained (pl. III and

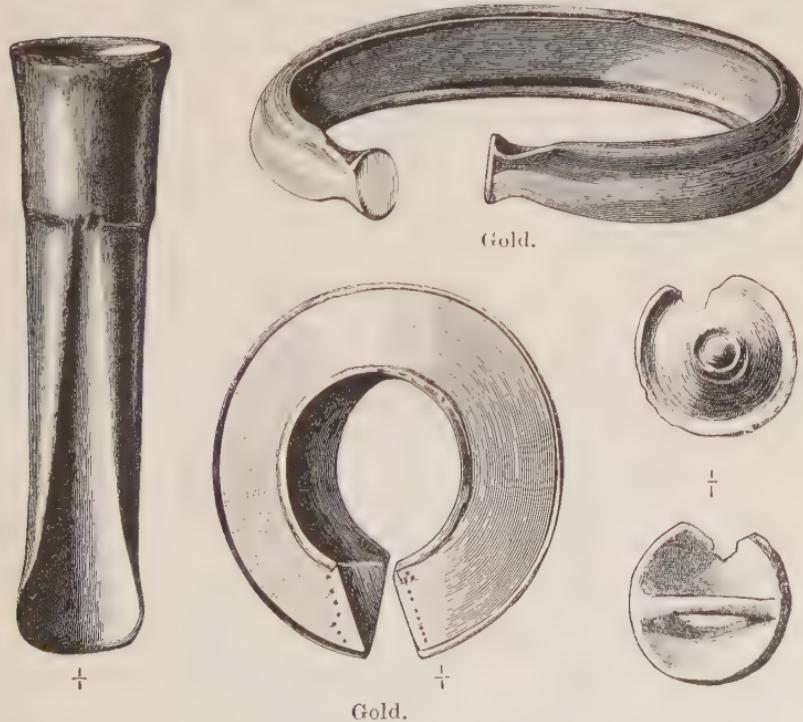
hoard from Broadward, Shropshire); also a socketed knife (cf. Bromley, Hoo, and Dowris hoards) and part of a sickle (as fig. 47, Taplow). The exceptional spearheads in the Broadward hoard resemble one from Plaistow (fig. 26), and are noticed above (p. 39). Jets, or waste pieces of cast metal, from the mouths of moulds for casting celts occur at Kensington, London, and with part of a bronze mould at Rochester, Kent; and one with three instead of two runners is in Case A. The socketed gouges which are of frequent occurrence in the hoards may have been used to extract the burnt clay core from socketed celts after casting.

What was apparently a founder's hoard was discovered in 1806 on the shore below Beachy Head, Sussex (pl. iv), and the series is not necessarily contemporary. It consisted of four gold bracelets with thickened terminals, three palstaves (one at least winged), two socketed celts, and part of a sword, with three pieces of copper-cake.

The discovery in Heathery Burn Cave, near Stanhope, co. Durham, is most important in many ways. It is by far the most instructive of any Bronze Age deposit in this country of a non-sepulchral character, and comprised the entire equipment of a family who had lived or taken refuge in the cave, and had there been apparently overwhelmed by the flooding of the burn. The various objects (figs. 33-5) may therefore be regarded as contemporary, and they unquestionably belong to the time when the Bronze Age culture had reached its highest point in Britain. The only sword found is imperfect in the tang and has slight shoulders near the base of the blade, thus agreeing with all four from the Dowris hoard (pl. viii): like nearly all the metal objects, it has a beautiful green patina (p. 114). The spear-heads, all of the leaf-shaped type, are admirably cast and of various lengths. Four bronze disks,  $5\frac{1}{2}$  in. across, with slightly convex faces, a hole in the centre and four radiating loops on the back (fig. 34), were no doubt attached by straps, but their destination is uncertain. There are six nave-collars of cast bronze with an inside diameter about 4 in., that anticipate Iron Age specimens found with iron chariot-tyres at Arras, E. Riding, Yorks., and others recently found in a cave at Burrington Combe, Somerset. In the upper part of Case 56 is a conical bucket of bronze like that in the adjoining case from Dowris, King's Co. (pl. v, no. 2); and beside it is a cruciform framework made to fit on the base of the bucket. Isolated examples of these imported products have occurred in North France, England, and Ireland, as well as in Denmark and North Germany; and their spread was undoubtedly due to the active intercourse with the South brought about by the amber trade, which can be traced back for many centuries before Christ. Prof. Montelius includes this type and the rest of the find in his fifth period for Britain (1150-800 B.C.); but as the



Lignite.



Gold.

FIG. 33.—Gold, lignite, and bronze, Heathy Burn Cave, co. Durham.



FIG. 34.—BRONZES FROM HEATHY BURN CAVE.



### Deer antler.

Bone,

FIG. 35.—Bronze and bone objects, Heathery Burn Cave.

type came from Italy (then in the Early Iron Age) a certain interval must be allowed for distribution.

Close parallels to other objects discovered—the knife both tanged and socketed, the razor, socketed celt, and gouge—may be seen in the Dowris hoard. Chisels, awls, pins, and rings of ordinary type were also found, with a bronze mould for socketed celts, tongs, and runners or jets, showing that metal was worked in the cave. One of the bronze bracelets exactly resembles that from Heneglwys in Case 97; and of the two gold ornaments one was a massive armlet of an ordinary type, the other a hollow penannular of triangular section. The only important classes of implement not represented in the find were the dagger, shield, hammer, and sickle.

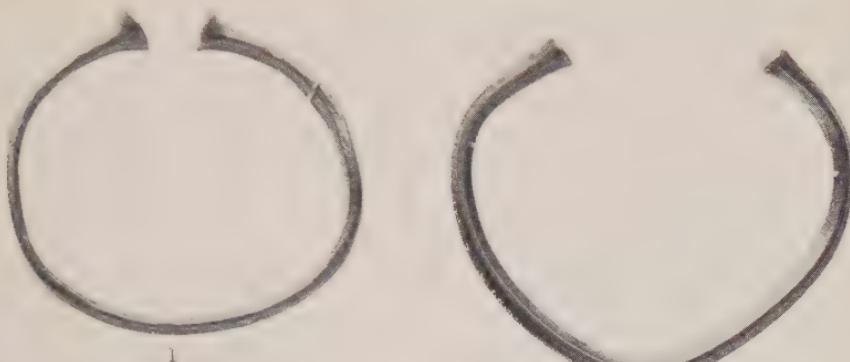
Bone was the material used for spindle-whorls, prickers, skewers, and several implements shaped like paper-knives, and probably used as mesh-rules for netting, as found in several Derbyshire barrows; and many cheek-bars of bridle-bits were made of deer-antler. Considerable skill is shown in the production of jet armlets, and there is a single amber bead and flint arrowhead with barbs and tang. Of pottery nothing was recovered but small fragments, all made without the wheel and undecorated, in this respect differing from much of the contemporary sepulchral ware.

A technical matter of some interest is the analysis of a socketed celt from this deposit, giving the following proportions: copper, 65.20; tin, 8.06; lead, 24.30; iron, 0.10; arsenic, traces; sulphur, 0.18; total, 97.86. A sword-blade gave 68.8 of copper, 9.4 of tin, and 20.3 of lead, showing that the alloy was not an accident. Such a quantity of lead is unusual, and is only exceeded by some small celts from Brittany, supposed to be votive. It is possible that this excess may be due to the abundance of that ore in Weardale.

Animal bones were of the ordinary character, but showed that the flesh of wild animals formed a very small part of the dietary of a people already provided with domestic animals. Marine shells were also found, but these were brought from the coast more probably as ornaments than for food.

Portions of three human skulls were discovered and lost again, but fortunately were examined in the interval by Prof. Huxley and Mr. Carter Blake. They appear to belong to the same race of rather small and lightly-made men with prominent superciliary ridges and projecting nasal bones. They did not correspond to either of the brachycephalic types (p. 19), but to the River-bed type of England and Ireland, which, according to Huxley, was practically identical with the Long-barrow race.

The relics from Heathery Burn Cave show, therefore, that the occupation took place towards the end of the Bronze Age, and are



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PLATE IV. CELT, SWORD, AND GOLD BRACELETS, BEACHY HEAD, SUSSEX.  
(Case 59, *see* p. 46)



all the more important as traces of dwellings dating from that period are extremely rare in these islands. The late Mr. J. R. Mortimer detected a few during his investigation of Yorkshire burial-mounds, and described their varieties as follows. Two examples had been built entirely above ground, with circular side walls made of vertical stakes interlaced with wattle-work and plastered with clay, the roof being thatched. In the centre of one of these was a grave containing an unburnt body. Another kind was sunk in the ground like a shallow well, with a leaning roof meeting at the top and probably thatched; and a few were pits with horizontal roofs and one or two sloping passages of approach from the surface. Two of these also had been subsequently used for burials.

In districts where stone was easily procurable there were no

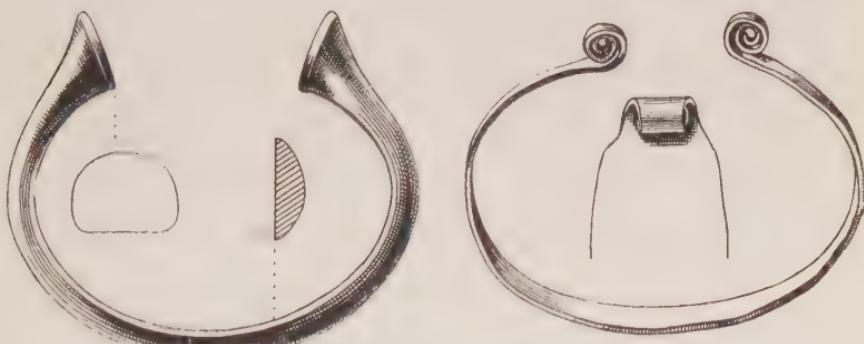


FIG. 36.—Gold bracelets, Cottingham, E. R. Yorks.  $\frac{2}{3}$

doubt many hut-circles erected in the Bronze Age of the type represented in fig. 101, but it is difficult, apart from datable finds, to determine the chronology of any given example.

At the bottom of two excavations that served as pit-dwellings at Wansunt, near Bexley, Kent, were found seventeen gold bracelets of penannular type with thickened (as fig. 38), crescentic (as fig. 36, left), or coiled (as fig. 36, right) terminals. The weights suggest that they were intended to be fractions or multiples of a unit, and their use as currency is not impossible. The Cottingham find (fig. 36) is further evidence that gold bracelets with crescentic and coiled terminals were contemporary; and those with thickened ends were evidently related to the former, which, in its turn, is connected with a Swiss lake-dwelling type best represented in England by the Tisbury examples (fig. 37). These two (found with others having coiled ends) are made of a plate of uniform thickness hollowed within, with the terminals set at right angles, and the type is assigned in France to Prof. Montelius' fifth period

(1050-850 B.C.). The type with thickened terminals occurs in the Beachy Head hoard (pl. iv), but is generally plain, exceptions to this rule being the single specimens from Little Chard, Kent (fig. 38), and Aspatria, Cumberland.

Irish imports may be looked for on the west coast, and the Morvah find of six includes three with trumpet-ends (as fig. 114) and one like fig. 36 (right), the others having hoops of flat and lozenge section, and thickened terminals. A heavy fragment from

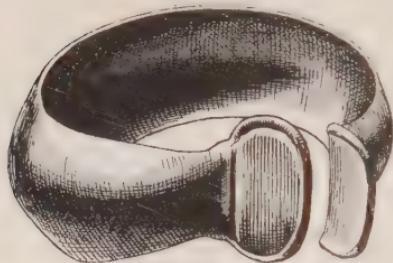


FIG. 37.—Gold bracelet,  
Tisbury, Wilts.  $\frac{2}{3}$

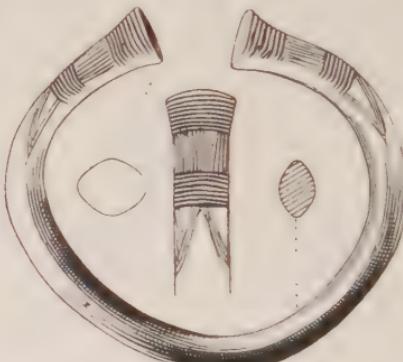


FIG. 38.—Engraved gold bracelet,  
Little Chard, Kent.  $\frac{2}{3}$



FIG. 39.—Gold fragment,  
Mountfield, Sussex.



FIG. 40.—Bronze bracelet, Liss,  
Hants.  $\frac{1}{2}$

the Lizard is also of Irish type, as well as the engraved lunette found in the Hundred of Penrith, near Penzance, Cornwall, one of four specimens from the county of a type described below (p. 93).

Two stout armlets of bronze, of penannular form with incised decoration, were found in a grave at Ramsgate with one corrugated horizontally, apparently of a Norwegian type (Jaederen), to which the gold fragment (fig. 39) from Mountfield, Sussex, may also be assigned. Another engraved armlet of solid bronze, from Liss, Hants. (fig. 40), is said by Prof. Montelius to have been

imported from the Continent and is placed in his fifth period (1150-800 B.C.).

A plain bronze armlet of triangular section was found with two curious bronze loops, of uncertain use, that may be called the Sussex or Brighton type (fig. 41), as nearly all the known examples have been found near Brighton. These were probably made locally, and examples of gold are said to have been found near Eastbourne. Nine of bronze are exhibited, those from Hollingbury Hill being associated with a palstave and twisted bronze collar on which were strung two small coils of plain or twisted bronze, like those in the Woolmer Forest hoard (fig. 42). These last may be ring-money, though different from that on the Boyton torc (fig. 44), and one of this coiled pattern was found with two penannulars on the Lincolnshire gold torc. The latter was the more usual form and is common in Ireland. Other English specimens



FIG. 41.—Bronze loop, Hand Cross, Sussex.  $\frac{1}{2}$



FIG. 42.—Bronze coil, Woolmer Forest, Hants.

have been found in the Fens (six on a gold armlet (fig. 43), with part of a rapier, and a torc not in this collection); at Daventry, Northants, and at Ford, Northumberland; while the Irish type with circular section is represented by two from Bridgewater, Somerset, and Maldon, Essex; and three with alternate stripes of gold and silver come from Rustington, Sussex; Dorchester, Dorset; and Mancetter, Coventry.

The twisted collar of gold or bronze, whether of the Bronze or Early Iron Age, is known by the name of torc (Latin, *torquis*) and is common during the Bronze Age in Britain, local varieties occurring in Scandinavia (p. 134) and occasionally in France, which eventually became the home of the Gaulish series (*Early Iron Age Guide*, p. 55). The twisting of the metal rod was, no doubt, to give brilliancy to the ornament, but there seems to be no example in our island of the alternate twisting seen on many Scandinavian examples (Case H), which probably date from a time when iron had come into use elsewhere. The fastening is by means of a pair of simple hooks, or long bars thickening towards the end and

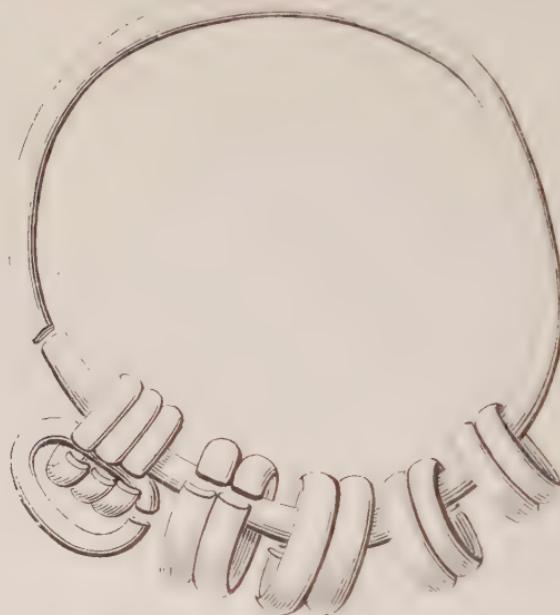


FIG. 43.—Gold bracelet with ring-money, Ely, Cambs.



FIG. 44.—Gold torc, Boyton, Suffolk.  $\frac{1}{2}$



PLATE V. BRONZE CAULDRON AND URN.  
(Cases 14, 55, see pp. 55, 107)



interlocking, the latter method being confined to the British Isles and the adjacent parts of France.

The hoop was either cast solid (the normal method in bronze) or was produced by twisting a simple or composite ribbon of gold. The more usual form of composite torc has a cruciform section X, two ribbons of gold having been bent longitudinally at right angles and their angles joined, the whole being then twisted, and consolidated in club-shaped hooks at the ends. Examples of this method are shown from Boyton, Suffolk (fig. 44); Castlemount, Dover; Ashill, Norfolk; and Stanton, Staffs. Another, from Lincolnshire, with section Y, has three flanges, produced by joining a narrow ribbon to the angle of another twice the width. The Dover and Stanton specimens have since been coiled as though for use as armlets, and many torcs are too long (unless coiled) for the neck, and may have been worn round the waist. The name *torc* has reference to the twist, not to the destination of the ornament.

Bronze torcs are common in the south-west of England. Two perfect specimens were found with penannular bracelets in Dorset, and a hoard of five at Tarrant Monkton. One from Hazelbury Bryan accompanied bracelets with overlapping ends; but the largest and finest bronze specimen in the collection came from the Thames at Westminster. Another clue to their date is given by the inclusion of a palstave in the Hollingbury Hill find; and it may be mentioned that a gold torc with hooked ends was found by Schliemann in the royal treasure of the second city on the hill of Hissarlik (dated before 2000 B.C., at least five centuries before the foundation of Troy).

#### Cases 51-55.

Only a summary can be given of bronzes found in isolation, which have, to a large extent, been mounted on boards according to type, in order to exhibit variations of the common structure. But first attention must be drawn to the large bronze vessels, known as cauldrons, in Case 14. The plain one, 13 in. high and 26 in. in diameter, was found in London, but the other (plate v, no. 1), from the Thames near Battersea (H. 16 in., D.  $22\frac{1}{2}$  in.) is the more usual form, and there are handles of a third from Ipswich. Some special function, perhaps of a ceremonial kind, must be assigned to those with an incurved reeded lip to which are attached a pair of ring-handles. Several have been found in Ireland and Scotland, but they are unknown outside the British Isles.

Razors, which belong as a class to the late Bronze Age, are here well represented, and include a variety of patterns. Perhaps the Cothill knife (fig. 45) may be included as a razor, as it has some resemblance to a Scandinavian form (fig. 144); but the commonest

form in the British Isles is an oval having a notch at the top with round hole below it, and a tang as handle, as fig. 46, which also shows a remarkable specimen with two loops from the Thames.

Sickles are comparatively rare in these islands, and it should be noted that the type with socket for hafting is practically unknown abroad, where the normal pattern resembles that from Taplow, Bucks. (fig. 47, left).



FIG. 45.—Knife, Cothill, Abingdon, Berks.



Thames, Putney.    Thames, Richmond.    Feltwell Fen, Norfolk.

FIG. 46.—Bronze razors of different types.  $\frac{1}{2}$

Another rare type in Britain is the pin (fig. 48). One has a swelling near the middle which is pierced, and the upper part engraved; and another is furnished with a loop (as often in France and Denmark) for some attachment to prevent it slipping from the hair or cloak. Two others, from the Thames and the Mantell collection (probably Sussex) are more closely related to the French pattern (p. 129).

Knives assume various forms, the Swiss lake-dwelling type with the blade doubly curved being rarely met with (one from the Thames at Wandsworth). Many, especially from the Thames and Ireland, have a rather flat socket (as fig. 111), one example from

Portland having been found with a Samian saucer of the second century, A. D. ; but that does not prove the prolongation of their use into Roman times.

An obvious importation from Denmark is the imperfect sword-handle found somewhere in Kent, with the rivets in almond-



Thames at Taplow, Bucks. Ireland. Athlone, co. Westmeath.

FIG. 47.—Bronze sickles, tanged and socketed.  $\frac{1}{3}$

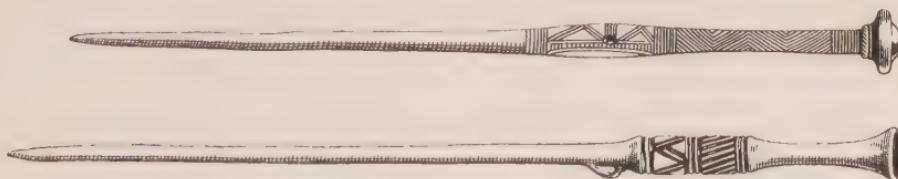


FIG. 48.—Bronze pins, Thames and London.  $\frac{1}{2}$

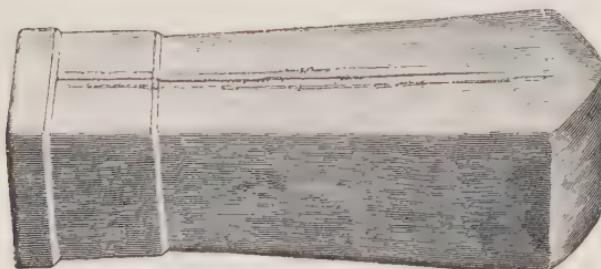


FIG. 49.—Hammer, Thorndon, Suffolk.

shaped enclosures (once filled with bone or horn) at the base of the blade. It belongs to the best period of the Scandinavian Bronze Age, which Dr. Sophus Müller dates a little before 1000 B. C.

Tools other than celts are not of frequent occurrence, but there are socketed hammers (fig. 49) from two hoards, and a saw (of

uncertain date, though made of bronze) was found in the filling of a flint-mine at Grime's Graves, Norfolk. Another has been found in a hoard near Felixstowe, Suffolk; a specimen from Huelva, Spain, is in Case J; and one of bone, from Malta, is exhibited in Case K.

Whereas the socketed gouge hardly varies at all, the chisel

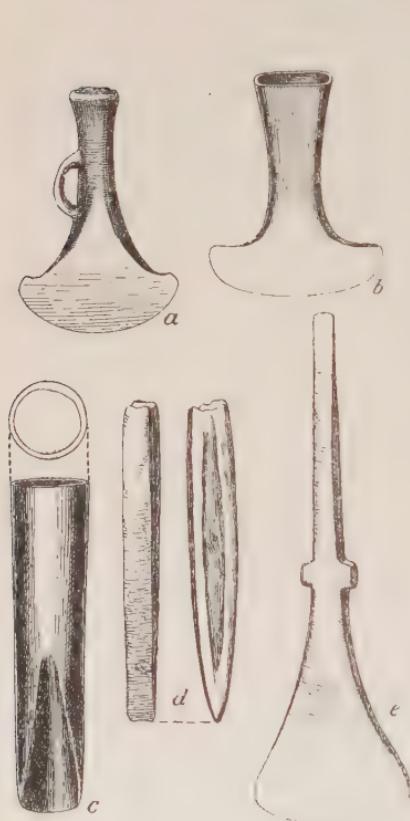


FIG. 50.—Chisels and gouge,  
England and Ireland.  $\frac{1}{2}$



FIG. 51.—Celt with lozenge pattern,  
Five Mile Town, co. Tyrone.  $\frac{1}{2}$

appears in many forms, a selection being given in fig. 50. A tanged specimen, in its original handle of deer-antler, is here exhibited, from the site of Millbank Prison.

Besides the series showing their evolution (Case P), celts arranged by counties in alphabetical order are exhibited in the lower part of Cases 51-55: others (from the northern English counties, and especially from the Thames) are placed in Cases 86, 87. Attention may be drawn to the diamond (fig. 51) or cable-

pattern (fig. 52) on the sides (as opposed to the faces) of several flanged specimens, engraved patterns on the faces being commonly found in Ireland. It will be observed that the winged type (as fig. 3, nos. 1, 2) is rare in these islands; and another type (fig. 53) is common to Britain and France (fig. 134). The socketed celt from Wandsworth (fig. 54) is altogether exceptional, but the raised crescents on several specimens (fig. 3, no. 3) confirm the view that this decoration is derived from the outline of the wings

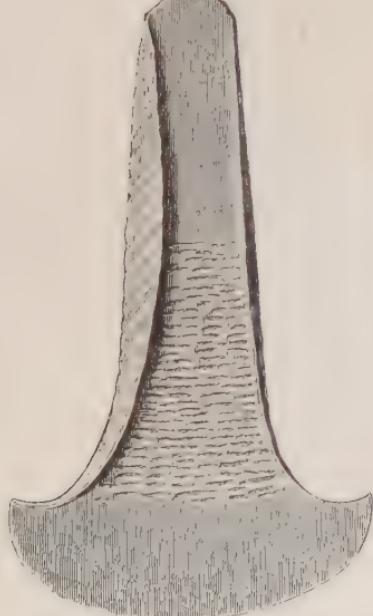


FIG. 52.—Celt with ornamented flanges, Liss, Hants.  $\frac{1}{2}$

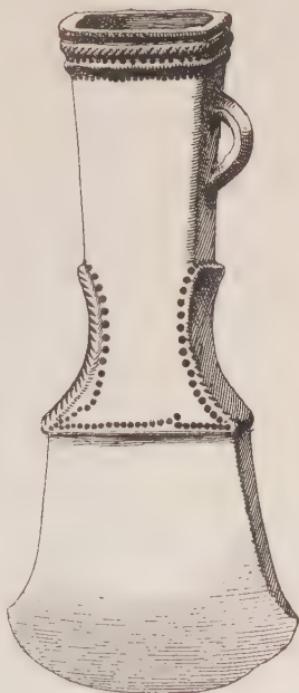


FIG. 53.—Socketed celt, Beverley, E. R. Yorks.  $\frac{2}{3}$

on an earlier form. Geometrical ornament in relief is not uncommon on socketed celts (fig. 55), consisting for the most part of ring-and-dot pattern connected by groups of lines. Two double-looped palstaves represent a small group in our south-western counties and Ireland, which seems to be connected with Spain (fig. 164); and one from the Charente, on the west coast of France (Case E), suggests intercourse by sea during the later Bronze Age.

Less open to criticism as aids to chronology are finds in association with recognized types of pottery, as these are generally from burials. To appreciate their significance some acquaintance is

necessary with Bronze Age funeral rites and the pottery vessels used in connexion with them.

The pottery exhibited in the Central Saloon and in Cases 12-30 of the Prehistoric Room may be regarded as sepulchral, not only in the sense that most, if not all, of it was recovered from human interments, but also because it was in all probability manufactured expressly for funeral purposes and not for domestic use (p. 17). In many cases nothing is known of the circumstances in which these vessels were discovered, but it may be assumed that the

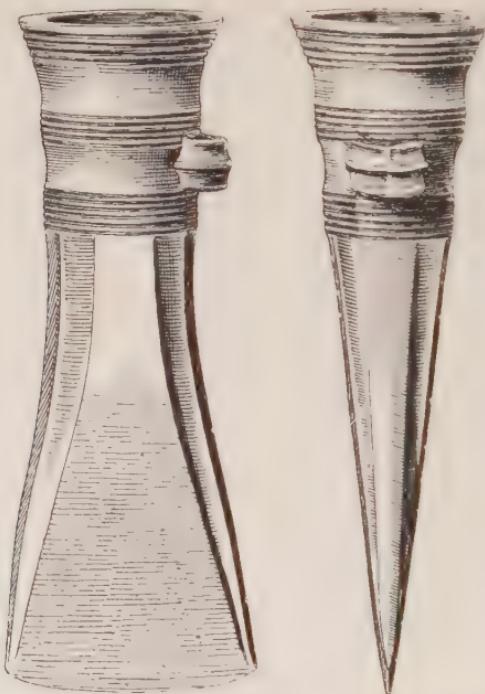


FIG. 54.—Socketed celt, Thames near Wandsworth.  $\frac{2}{3}$

majority had been deposited with the dead in grave-mounds or 'barrows' (Anglo-Saxon *beorh*, *bearw* = mount, hill).

The use of the term barrow is preferable to that of the Latin *tumulus*, which means a mound of any kind, not necessarily sepulchral, but there are other terms still in use locally, such as Low (Anglo-Saxon *hlæwe* = hill, mound) in Derbyshire and Staffordshire, and Howe (Danish) in Yorkshire, to denote these grave-mounds. They are generally of earth, though on the downs chalk is very often used for the purpose, and in other districts stones of various sizes, in which case the word 'cairn' is more

appropriate. In size and shape many differences have been observed, even in the same district, but they may be roughly classed as Long and Round barrows; and while such enormous structures as Silbury Hill in Wiltshire must be regarded as exceptions, it should be borne in mind that many existing barrows that are scarcely noticeable may have been originally of more imposing proportions and been specially exposed to denudation. For reasons that have already been noticed (p. 14), the Long barrows may here be left out of account, as definitely belonging to the neolithic period (though Yorkshire examples of this type contain human remains that were cremated on the spot in an elaborate manner).



FIG. 55.—Socketed celt, Thames at Kingston.  $\frac{1}{2}$

but a few general remarks may be added with regard to Round barrows in this country. It is usual to speak of them and the pottery they contained as British, but though the name is correct in the sense that this collection is from barrows in the British Isles, it is anything but certain that the country was already in the hands of Britons when the first Round barrows were raised (p. 19).

As a rule the Bronze Age barrows are circular, with a diameter of 50–100 ft., and a present height of 2–6 ft., forming in section the outline of a cone or an inverted bowl (figs. 56, 57). In some cases they were surrounded by a ditch or ring of detached standing stones, which are, however, sometimes covered by the material of the mound; and it has been often observed that the circle of the

stones or ditch is incomplete, a feature that occurs also on cup-marked stones (below Cases 8-11) of the period, and may have had a ceremonial significance. The disk-shaped barrows of Wiltshire, however, have a complete ring formed by a ditch within a bank; and one or more diminutive mounds generally mark interments in the central area. According to the late Dr. Thurnam, burials in this last class of barrows were almost exclusively after cremation, but not in cinerary urns, the ashes being deposited in small cavities scooped out of the chalk rock.

The barrows are found in groups, and also in isolation, but are irregularly placed, and as a rule have no apparent connexion with

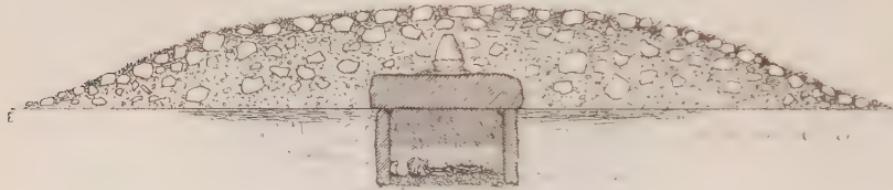


FIG. 56.—Section of barrow, Bamborough, Northumberland (clxxvii).

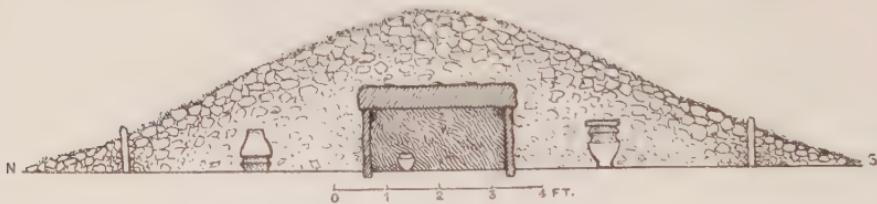


FIG. 57.—Section of barrow, Ford, Northumberland (clxxxvii).

each other. They are most conspicuous on the open chalk downs of Wiltshire, Dorset, and the East Riding of Yorkshire, but are also common in Derbyshire, and may once have been more numerous than at present in other districts which have been under cultivation for centuries; but the distribution of the earliest type of sepulchral pottery shows that the population which raised the earliest round barrows was concentrated on the coasts of Scotland, and in the English districts specified.

Scattered throughout the material of the mound are constantly found animal bones, which have been generally broken to extract the marrow, also chippings and waste pieces of flint as well as potsherds. These last are not as a rule of the same ware as the sepulchral vases presently to be noticed, but apparently belonged

to domestic vessels ; and it is remarkable that the fragments do not belong together but to several different vessels, so that they cannot be regarded as remnants of the pottery used at the funeral feast and subsequently shattered over the grave.

Though many barrows retain no trace of an interment, the majority were no doubt used on more than one occasion, and enclosed the remains of men, women, and children ; but instances are known of the erection of an extensive barrow over the solitary body of an infant. The method of deposit varied at different periods, and in spite of the fact that both practices were for some time contemporaneous, it may be laid down as a general rule that burial of the dead in a contracted position was in vogue before cremation and the deposit of the ashes in pottery urns. Coffins formed of tree-trunks split and hollowed have been occasionally found in this country, and in Denmark belong to the earliest period of the Bronze Age. In that country they contain the skeleton wrapped in a woollen textile, and similar remains were found at Rylston, West Riding of Yorkshire. The archaeological significance of funeral customs has already been touched on (p. 14), and it will here suffice to notice that while the unburnt burials in Round barrows are sometimes ambiguous, cremation and urn-deposit are characteristic of the Bronze Age in this country.

There are within certain of the circular mounds chest-like receptacles (stone cists) for the unburnt body (figs. 56, 57) ; and also enclosing-stones at or inside the margin of the mound (fig. 57) that recall the stone chamber and the ring-fence of the Long barrows. Canon Greenwell remarked that a very close connexion thus appears to exist between the Long barrows and certain of the Round barrows of Britain, which also agree in the absence of metal and the scarcity of pottery vessels in association with the interments. Attention has already been directed to the striking difference in the character of the skulls found respectively in the Long and Round barrows (p. 18), and it is reasonable to suppose that the beakers, which are undoubtedly the earliest form of vessels from the Round barrows, are to be referred to the transition period when the population was mixed, and the long-skulled aborigines were giving way before short-skulled immigrants from the Continent.

In this connexion fundamental differences in the disposal of the dead must also be noticed. In the Round barrows sepulchral vessels of pottery appear, and in cases of cremation the ashes of the dead were deposited either in a hollow in the floor of the grave or in a cinerary urn. Again, the unburnt body was laid on one side, right or left indifferently, and directed towards any point of the compass, with the knees almost invariably doubled up to the chin and the hands often in front of the face, but in no uniform position. It was, however, observed on the Yorkshire Wolds that

when the head pointed approximately to the west, by far the larger number of bodies were laid on the right side, whereas when the head was to the east, the majority lay on the left side, the tendency being for the face to be set towards the mid-day sun.

Apart from subsequent or secondary interments, there were several instances on the Wolds of more than one body in a grave, and, on the other hand, barrows were sometimes met with in which no human remains could be discovered. In such cases it was argued, with great probability, that an unburnt interment had taken place and that owing to unfavourable conditions the bones had completely decayed; for example, in sandy soil it is very rare to find any traces of buried bones even of much more recent date than the Bronze Age, whereas burnt bones are practically indestructible. Some barrows have indeed been regarded as cenotaphs, or monuments raised to commemorate, but not to contain, the dead who were buried elsewhere. It is, however, probable that in some cases the skeleton, if not altogether decayed, has been overlooked by the explorer, especially as the principal interment is occasionally at some distance from the centre owing to the irregular construction of the mound.

Besides the potsherds and flint chippings already mentioned, fragments of charcoal were rarely, if ever, wanting in burials by inhumation examined by Canon Greenwell. This substance, in large or small quantities, was in actual contact with the body, and cannot, therefore, be merely the remains of the fire at which the funeral feast was cooked. As the rite of cremation was prevalent in this country during the later Bronze period, it is not unlikely that in cases where the dead were not reduced to ashes, it was considered sufficient that the body should pass through the fire; and for this ceremonial act the application might at times have been so trifling as to leave upon the bones no indication of burning.

The manner in which the dead were deposited in the barrows varied considerably on the Wolds as elsewhere in this country: but in the North and East Ridings, as also in Derbyshire, the Round barrows were almost without exception bowl-shaped. Sometimes the body, whether burnt or unburnt, had been placed in the mound without anything to protect it from the surrounding earth or stones; at other times, in a stone cist on or below the original level of the ground, in a hollowed tree-trunk, or in an oval or circular grave; while secondary interments occupied other parts of the mound at various levels. The cinerary urn found inverted on the lid of a cist at Bamborough (cxcvii, fig. 56) has a peculiar scalloped pattern round the neck (Case 28); and the beaker found with a skeleton within the cist is in Case 22. In the other barrow illustrated (clxxxvii, fig. 57), the cist contained a food-vessel (Case 28) near portions of the skull

of a child about two years old ; and one of the six cinerary urns which encircled the cist is shown in Case 27.

In most cases of cremation the body appears to have been burnt apart from the place where the bones were ultimately deposited ; but numerous instances occur where the calcined remains had been interred on the site of the funeral pile, which was frequently constructed over a hollow made to contain the ashes. Pins, generally of bone, have been commonly found with deposits of burnt bones ; in most cases they are themselves calcined, and, no doubt, belonged to the dress in which the body was enclosed before burning, but when untouched by fire they have probably served to fasten the cloth or hide in which the bones were collected after cremation. The care with which this was commonly done is well illustrated by Homer's account in the *Iliad* of Hector's white bones being gathered up from amongst the ashes of the pyre by his brethren and companions. The custom of sacrificing animals and human victims in honour of the dead may explain the traces of more than one human skeleton, and of bones of the ox (*Bos longifrons*), pig, goat, or sheep, horse, and dog in cremated burials.

The green stain sometimes observable on bones from the barrows is not always due to the proximity of bronze or copper, but has been found on analysis to be caused by the presence of phosphate of iron, a salt which can assume various tinges of blue and green. There is, however, no doubt that a minority of the Round barrows on the Wolds contained, besides a large number of flint, bone, and horn implements, arms and ornaments, copper and bronze implements that fall into six well-defined classes. All the conditions, however, point to the early date of such interments in the Bronze period, and the comparative scarcity of the metal.

The following figures for the Round barrows of the Yorkshire Wolds, excavated by Canon Greenwell, may be of interest. Altogether about 435 burials were discovered, burnt or unburnt, some being disturbed and scattered, others containing more than one body. Of the total, seventeen had implements or ornaments of metal, some possibly of copper but usually described as bronze ; seventy-three had implements of flint or other stone ; and five had tools or ornaments of jet, bone, deer's horn, or boar's tusk. Of the unburnt burials, about 350 in all, about 23 per cent. were accompanied by articles of some kind, against 13 per cent. in the cremated burials. Though bronze was, no doubt, well known during the later cremation period, economy of the still precious metal would account for the fact that it was absent in all but five cremated burials ; while the funeral fire explains the comparative rarity of more perishable articles in graves of the same description - 11 per cent. against 19 per cent. in unburnt burials. Only about

24 per cent. of the burials in these barrows were accompanied by articles of any kind ; and this fact is of importance in view of two opinions as to the motives that led to such deposits with the dead. A belief that such might be of use in another world, or a superstitious dread of using what had belonged to the dead, may have given rise to the practice, but in either case it is difficult to understand why it was not more generally observed. That great care and labour were bestowed on the burial and the raising of the mound is evident on many grounds, and some of the objects found in the graves are quite new and, to all appearance, specially made for the occasion.

The projecting range of Cases 21-30 contains the Barrow-relics excavated in Yorkshire, and presented by Canon Greenwell ; and Cases 19 and 20, those found by him in other northern counties, the Roman numerals on the plinth of each specimen indicating the number of the barrow described in *British Barrows*, from which it was taken.

The sepulchral pottery of the Bronze Age in Great Britain and Ireland has been carefully examined and profusely illustrated by the Hon. John (now Lord) Abercromby, who supplied maps showing the distribution of the various types.

An index series of the sepulchral pottery produced in these islands between the close of the neolithic period and the introduction of iron has been arranged in Cases 94 and 95, at the head of the principal staircase. All was made without the potter's wheel, and the baking was often imperfect, owing to the use of an open fire ; but the mistake of calling any of it 'sun-baked' is as common as it is elementary. The clay is generally mixed with minute pebbles, or fragments of broken flint, quartz, chalk, or shells, perhaps added intentionally to strengthen the ware : while for some of the finer vessels the clay was tempered by the admixture of grit or sharp sand. Cinerary urns may, in many cases, have been baked in the embers of the funeral pile.

1. *Beakers* (pl. vi, nos. 1-3). These were called drinking-cups by Sir Richard Colt Hoare, who assumed that the tall cylindrical vessels of good thin ware found almost exclusively with unburnt interments, were intended to hold liquid, either for refreshment during the journey to the next world, or to propitiate the spirit of the dead in the interests of the living ; but the term 'beaker' is more convenient, and corresponds to the names given to the type on the continent. As vessels of this and the following type were not placed in the grave empty, and remains of a more or less solid nature have been traced in both, it is probable that the beaker fulfilled the same purpose as the 'food-vessel' which succeeded it, having been found with separate interments in the same barrow. The earlier kind is, however, practically confined to certain parts of Britain, and the only specimens that can with

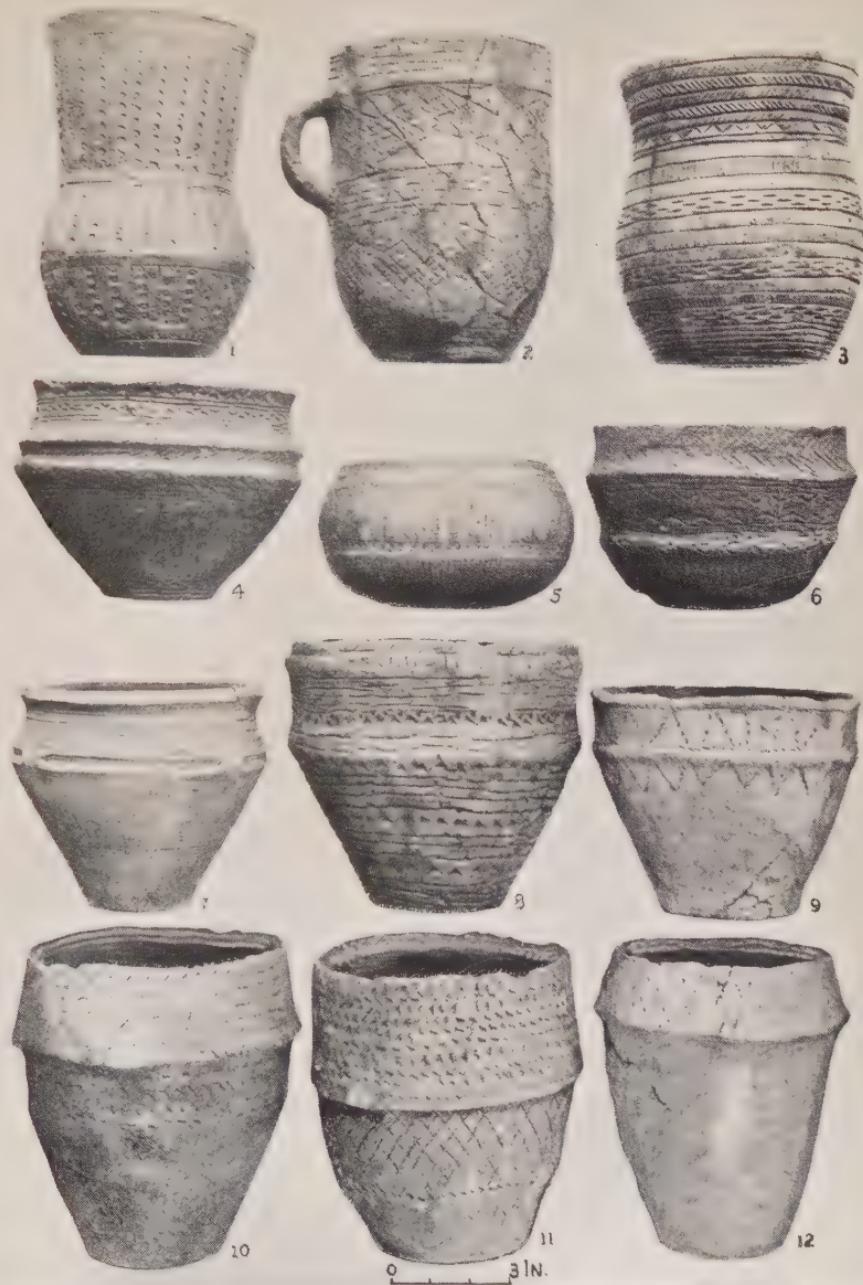


PLATE VI. SEPULCHRAL POTTERY, BRITISH ISLES.

(Cases 94, 95, 8-30, see pp. 66, 68, 70)



certainty be referred to Ireland were found in one grave at Moytirra, co. Sligo.

The ordinary form has a cylindrical neck which sometimes inclines to an inverted cone, joined to a globular body, both portions being covered with ornament, whereas the corresponding continental form, the *Schnur-becher* (pl. ix, no. 1), has the body quite plain except for a fringe that serves as a border to the ornamented neck. The sharp angle between the two component parts was not constant, and there are intermediate forms between the angular and the bell (or tulip) pattern that occurs in Germany and Holland, as well as in the dolmens of Brittany (*Stone Age Guide*, fig. 157) and other parts. In all their varieties, however, beakers are, on the Continent, definitely assigned to the late neolithic or Copper period, and it is without prejudice to their chronology that they are here noticed among the contents of Round barrows.

The ornament is, for the most part, disposed in horizontal bands, like the continental *Zonen-becher* (pl. ix, no. 2), but in some cases the vertical treatment of the neck-ornament emphasizes its distinction from the body. It is executed by means of twisted thongs impressed in the moist clay, producing the characteristic cord-pattern, and also by pointed or shaped rods of bone or wood, forming herring-bone or hatched patterns and stamped rings. It may be added that though beakers are usually found in Round barrows with unburnt bodies, examples have been found in Yorkshire (Case 29), Wiltshire, Northumberland, and Scotland, associated with cremated remains, while this type of vessel is rarely found with articles of bronze.

Special attention may be drawn to a specimen with handle from Appleford, Berks., found near the shoulder of an adult skeleton. Another is exhibited in the adjoining Case 21 (pl. vi, no. 2), and others are known from Pickering, North Riding of Yorkshire; Brixworth, Northants.; and March, Isle of Ely. The beaker from Lambourn Downs, Berks. (pl. vi, no. 1), may be taken as a good example of Lord Abercromby's A series, and one from Goodmanham, E. Riding, Yorks. (pl. vi, no. 3), is typical of Class B.

The main series of beakers is exhibited in the Prehistoric Room, Wall-cases 21, 22 (Yorkshire); 19, 20 (other northern counties); and 17 (southern counties of England). Scottish examples are in a pier-case at the head of the main staircase.

Among several examples from Suffolk may be mentioned two beakers (fig. 58) found at Brandon with the bracer (bowman's wrist-guard) exhibited with them (fig. 59). No human bones, burnt or otherwise, were found with them, and it is therefore likely that they belonged to an unburnt burial, as burnt bones are practically imperishable.

The series of vases from Hitcham, Bucks., was found during the excavation of some circular dwellings in which beake

cinerary urns, and other vessels (Case 17) are said to have come to light, together with bones of domestic animals, ornamental pottery fragments, and part of a polished stone axe. These hut-circles or pit-dwellings were formed by sinking a floor 3-7 ft., and throwing out the earth round the opening which was 14-20 ft.



FIG. 58.—Beaker, Brandon, Suffolk.

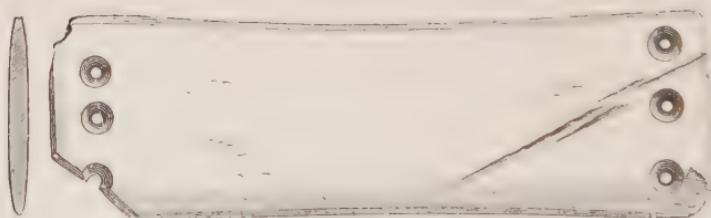


FIG. 59.—Stone bracer, Brandon, Suffolk.

in diameter: on the bank thus formed were placed stakes leaning towards the centre and supporting a roof of turf, bracken, or other material. Similar dwellings have been found within the earthwork on Eggardon, Dorset; and finds at Peterborough, Northants., and Gullane Bay, Haddingtonshire, show that beakers were made for the household and not exclusively for funeral purposes.

2. *Food-vessels* (pl. vi, nos. 4-9). These undoubtedly succeeded

the taller and better-made beakers, and are found in considerable numbers in Ireland as well as in Britain, the majority having been deposited with unburnt bodies in Round barrows, though they are frequently found among, and even containing, cremated human remains. The ware is somewhat coarser than that of the class described above, and considerably thicker; while the ornament, which is lavishly bestowed on the outside of the vessel, extends in some specimens inside the lip, and a cruciform design is by no means uncommon on the bottom. They are sometimes provided with covers, and with a number of lugs or ears round the contracted neck, which are either pierced for the insertion of a cord, or are merely ornamental survivals of such attachments. The mouldings round the neck and rim, and the delicate ornamentation on many specimens render the food-vessels, on the whole, the most attractive class of Bronze Age pottery in this country, and it is interesting to note that they are quite unrepresented outside the British Isles, having been developed locally and not introduced from abroad. A remarkable fact is that they are rare in Southern England and are entirely wanting in Wiltshire, a district otherwise rich in prehistoric remains.

An index series is exhibited in Wall-case 95 at the head of the main staircase, Scottish and Irish in adjoining Pier-cases.

It now seems clear that this type was a native development of the neolithic bowl, as represented by the Mortlake specimen (*Stone Age Guide*, fig. 156) in Case 74; and the stages of development are best seen in the Irish series (p. 102). This can be accounted for by the retreat of the native population before the beaker-people from overseas, and the westward movement no doubt extended into Ireland where (as already stated) beakers are extremely rare. On the other hand the traditional round-bottomed pot there underwent several small changes, acquiring a flat base, an angular outline, and lugs (originally pierced for suspension) set on the shoulder or within a hollow moulding. As the short-headed invaders were gradually absorbed or exterminated, the native potters eventually returned to the east coast, and their products in the middle of the Bronze Age are now known as food-vessels, as some at least contained food for the dead. On pl. vi, no. 5 is a form found in Ireland and Scotland, and no. 6 is an evident link between the neolithic bowl and the fully-developed food-vessel no. 4. No. 7 from Alwinton, Northumberland, has lugs on the shoulder and a cross on the base (fig. 60); and nos. 8 and 9 foreshadow the cinerary urns.

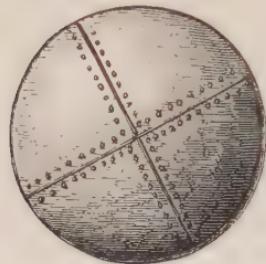
An attempt has been made to divide the food-vessels in the Greenwell collection into two groups, found respectively with unburnt (Cases 23, 24, 27, 28) and cremated (Cases 29, 30) burials; and a few examples with special features are here illustrated. That from Goodmanham, E. Riding, Yorks. (fig. 61), is of unusually fine

workmanship, and was found in the same barrow as a casket (Case 30) which adjoined the cremated bones of a woman. Both are possibly by the same hand, but the bowl may have belonged

to a primary unburnt male burial. A diminutive specimen from Ganton, E. Riding, Yorks., is shown with its cover (fig. 62), but this addition is of rare occurrence. One from a cremated burial in one of seven barrows at Durnford, Wilts. (fig. 63), belonged to 'a sort of jar with a narrow mouth and perforated ears at the shoulders'. Other food-vessels are arranged according to locality in the Prehistoric Room, Wall-cases 12-20.

FIG. 60.—Base of 'food-vessel', Alwinton, Northumberland.  $\frac{1}{2}$

formed receptacles for the cremated remains of the dead. Though the origin of one series (pl. vi. nos. 10-12) may be seen in such forms of the food-vessel as nos. 8 and 9 on that plate, the change in quality, design, and dimensions is very striking, and it is not surprising that many of these urns, being of considerable size as



3. *Cinerary urns* (figs. 64-67 and 100). As a class these are undoubtedly later than the beakers and food-vessels and



FIG. 61.—'Food-vessel', Goodmanham, E. R. Yorks.  $\frac{1}{2}$

well as of coarse and ill-baked ware, have only been recovered in a very fragmentary condition. Their magnitude, however, says something for the technical skill of the potter, and the grit that is noticeable in the paste was necessary to prevent the clay from cracking during the process of firing. The usual form consists of two truncated cones placed base to base, the upper one forming

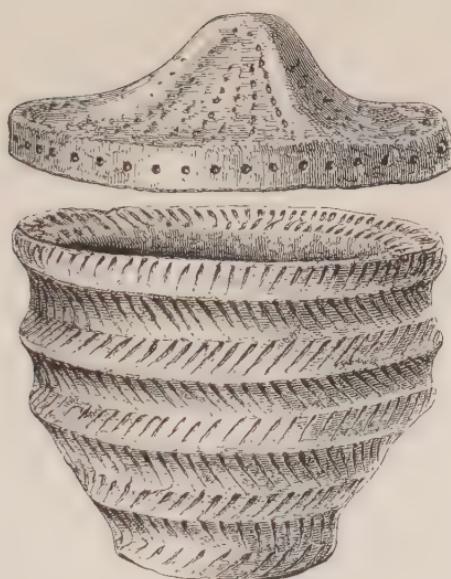


FIG. 62.—‘Food-vessel’ with cover, Ganton, E. R. Yorks.  $\frac{3}{4}$

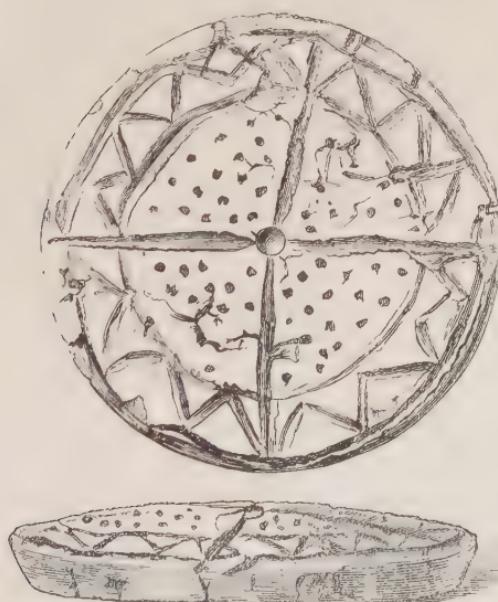


FIG. 63.—Cover of urn, Durnford, Wilts.  $\frac{2}{3}$

a deep overlapping brim to which the ornamentation is in many cases confined. Other shapes are, however, common, and specimens from one or two sites have the walls almost vertical, while the decoration was executed with a twisted thong, with a pointed tool, or with the finger-point and finger-nail, the size of which suggests that the potters belonged to the female sex, as is generally the case among savages at the present day. In barrows cinerary urns occur either upright or inverted; and in the latter case, there may have been a perishable covering tied over the mouth to keep the bones inside, but that this was not the usual practice seems clear from the fact that the ornament would in that way be entirely hidden from view. Associated with cinerary urns, and sometimes placed within them, are commonly found the fourth class of vessels, which run to the other extreme, and are often very diminutive but highly ornamented.

Small and medium-sized cineraries are included in the index series (Wall-case 95), and those of large size in the lower part of table-cases in the centre. Others in the Pier-cases, and also in the Prehistoric Room, Wall-cases 8-30.

In Cases 15, 16 is sepulchral pottery, mainly from Dorset, excavated by the late Mr. Henry Durden, of Blandford. The Milborne barrow measured 10 ft. in height, and 160 ft. in circumference. At a depth of  $2\frac{1}{2}$  ft. was a cairn of flints 2 ft. high, under which lay two skeletons on their backs, with the feet to the east. These interments may have been centuries later than the cremated remains found in another cairn at the centre of the mound,  $4\frac{1}{2}$  ft. high, and 16 ft. from east to west. In this mass were found large urns with covers of flint or sandstone, and smaller vessels, indicating nearly fifty burials here.

In Case 13 are some decorated fragments of large vessels, probably of cinerary urns, found in one of the upper levels of a cave at Berry Head, Devon, not far from the famous Brixham Cave. These were found above a stalagmite floor which covered plentiful remains of extinct animals. An interesting relic from this cave is a bone handle of some bronze instrument which has left a greenish stain.

In the upper part of Wall-cases 8-11 are exhibited specimens, mostly imperfect, all found on the common between Ashford and Sunbury, Middlesex, arranged in straight lines running east and west, or in crescents facing east, but no mounds were visible. Nearly all had been placed just below the surface in an inverted position, the consequence being that in most cases the bottom has been ploughed off and the upper part alone remains. The sides of most were nearly vertical, and the ornament consisted of a raised band a little below the rim, with finger-indentations or a few bosses in the same position. One has raised semicircles round the upper part that may possibly represent the handles

of a basket prototype. Two large hollows were found in which cremation had taken place, the ashes being subsequently transferred to the graves, where they were placed in, or covered by, the urns. No metal was found on this site, though about thirty burials were found in a space of 50 ft. by 20 ft.

One illustrated (fig. 64) shows a pair of holes bored near the rim to repair a crack before its deposit in the earth; and other examples of this practice are shown from Middlesex, Dorset, Wilts., and Berks. (Cases 12, 14-16).

A well-made cinerary urn in miniature (fig. 65) with herring-bone decoration, was found with human remains which had been burnt on the spot, at Goodmanham, East Riding of Yorkshire (lxxxiv, Case 30); and one of normal size (fig. 66) comes from what was no doubt a secondary interment in a barrow near Prudhoe, in Ovingham parish, Northumberland (ccxiv, Case 30). It much resembles a food-vessel in outline and decoration, the latter covering the outside and extending within the lip.

The globular cinerary urn from Lambourn Downs here illustrated (fig. 67), belongs to a type found also in Dorset (Case 16), and has a chevron pattern barely discernible, as well as lugs or bosses round the shoulder.



FIG. 64.—Cinerary urn with repair-holes,  
Ashford, Middlesex.  $\frac{1}{4}$

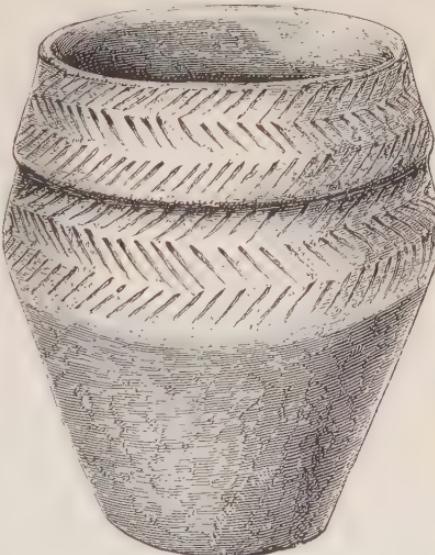


FIG. 65.—Cinerary urn, Goodmanham,  
E. R. Yorks.  $\frac{1}{2}$



FIG. 66.—Cinerary urn, Ovingham, Northumberland.  $\frac{1}{3}$

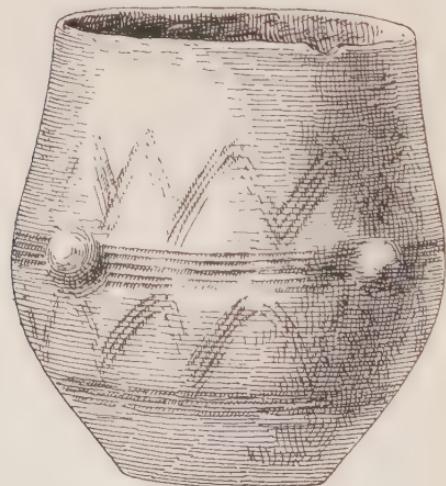


FIG. 67.—Cinerary urn, Lambourn Downs, Berks.  $\frac{1}{4}$

In 1850 eight barrows were examined on Broughton Common, about 25 miles north of Lincoln. They had been much reduced by the plough, none being at that time more than 4 ft. high, and all were circular, with diameters of 60-80 ft. One of the cinerary urns is plain but well-fired, of a reddish colour, and contained among the burnt bones two flint lance-heads, one very well chipped, shown below (Case 18). Another barrow contained two urns, one inverted as a cover over the other, with a small tanged knife or razor of bronze among the ashes. The barrows contained one burial each, the urns being upright and often surrounded by charcoal and ashes, but not protected in any way by stones, the sole material being a sandy peat.

Pottery from Cornwall is grouped in the lower part of Case 12.

The large cinerary urn with two handles from an oval barrow at Tregaseal, near St. Just, was found inverted in a small cist and packed round with stones and rubbish. The cist was of dry masonry and adjoined a sepulchral chamber built in the same mound. This was formed of upright stone slabs, the interior being over 11 ft. long, 2 ft. wide, and 4 ft. high, with three large capstones, and was no doubt erected in neolithic times. Subsequent burials in and around it might account for the burnt bones, pottery, the perforated whetstone within the larger cist, and the added building at the end. The urn is remarkable not only for its size but also for a raised cross on the bottom inside, which may be compared with one from a cave near Brixham, in Case 13.

The cinerary vessel resembling a breakfast-cup was found by Mr. Borlase containing and surrounded by burnt human bones in a pit 9 ft. from the top of a barrow on Denzell Downs, near St. Columb, Cornwall. It is of exceptional form, and, unlike other sepulchral urns from the county, bore no traces of fire. Four urns, of which two are exhibited, were found at Clahar Garden, Mullion parish, in a cairn 36 ft. in diameter, which was enclosed by an outer ring of stones. The large four-handled urn from Tredinney was found inverted in a cist within a circular cairn, the latter being surrounded by a ring 38 ft. in diameter, formed of 16 granite blocks set on edge. The body had evidently been reduced to ashes on a flat stone above the cist, and the bottom of the urn may have been broken off to admit the cremated remains.

4. *Incense-cups* (figs. 68-73). The name of this division is again due to Colt Hoare, and though purely conjectural, may be retained till some more plausible explanation of their use is forthcoming. They are intimately associated with the burning of the dead, but are not by any means as common as cinerary urns, inside which they are very frequently found. In shape and decoration they vary considerably, but are generally pierced in one or more places as if to assist combustion. The more characteristic forms are illustrated and many have loops for suspension, while

in some cases the bottom is ornamented with cruciform and other designs similar to those already referred to on certain food-vessels, but which are in all probability devoid of any special significance. As some specimens are unpierced, it is unlikely that they were used for incense, even if we suppose incense was then procurable, but the same objection is valid against their use as braziers to carry sacred fire from the family hearth to the funeral pyre; and the perforations negative the idea that they were used as lamps. Whatever their use, they seem in nearly every case to have been placed in the grave after the body had been reduced to ashes. Though found throughout Britain and Ireland, they occur but rarely in Dorset and the neighbouring districts to the north and west, and so far as is known are altogether wanting on the



FIG. 68.—‘Incense-cup’, North Newbold, E. R. Yorks. <sup>2</sup>

Continent, though a few similar specimens are recorded from tombs in the Channel Islands.

An index series is in Wall-case 95, and other specimens in the Prehistoric Room, Wall-cases 25, 26, and elsewhere in county groups.

The mound in which two incense-cups were found at North Newbold, East Riding of Yorkshire, was one of five, all being originally about the same size, 40 ft. in diameter and 4 ft. high. At a depth of about 15 in. was a hearth near the centre, filled with burnt bones, and on and amongst the ashes were the cups of which one is illustrated (fig. 68); but no other remains were found in this mound.

The incense-cup from Beedon, Berks. (fig. 69), was found 10 ft. deep, with a cremated interment in the south side of a ‘bell-barrow’ called Borough (or Burrow) Hill. Below a layer of charred wood

in the centre of the mound was a ring of seven holes in the original surface, about 1 ft. deep and 2 in. in diameter, partly filled with charred or decayed wood. At Bulford, Wilts., a remarkable specimen (fig. 70) was found in a barrow with a cinerary



FIG. 69.—‘Incense-cup’, Beedon, Berks. (Diam. 3½ in.)

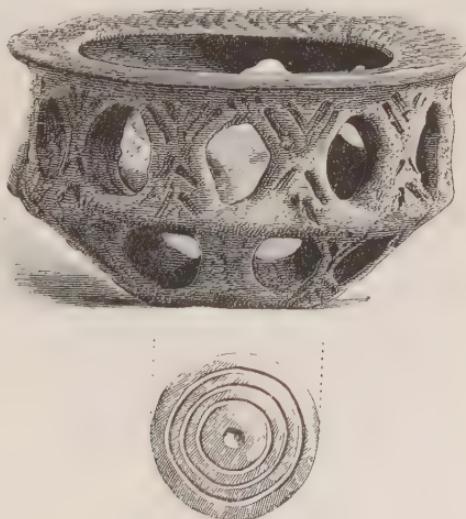


FIG. 70.—‘Incense-cup’ and design on base, Bulford, Wilts. 2.

urn, two bronze pins and small beads; on the bottom are deeply incised concentric rings closely resembling the design often seen on ‘cup-marked stones’ (Cases 8-11). Similar rings occur on the base of a ‘slashed’ specimen from a barrow at Great Shefford, Berks. (fig. 71), where the objects exhibited with it were also found, but their connexion is uncertain. Another type from

Roughridge Hill, Wilts., with very small openings in the side, has cord-pattern all over the body and inside the lip (fig. 72).

A group of three vessels was found in ploughing near Wycombe, Bucks., buried in a shallow grave in the chalk. The large cinerary urn at the bottom of Case 17 was inverted and contained an incense-cup among the ashes ; while the third vessel lay outside, resting on the shoulder of the urn, also inverted. These two are in Case 95.



FIG. 71.—‘Incense-cup’, Great Shefford, Berks.



FIG. 72.—‘Incense-cup’, Roughridge Hill, Wilts. 3

A barrow at Aldbourne, Wilts., contained an exceptional number of articles which may be described in some detail as typical of the Round barrows generally. The mound was 90 ft. in diameter, and at the time of opening was still 6 ft. in height, though much ploughed down. It was composed of earth with some chalk and sarsen-stones, and contained at the centre a pile of sarsen-stones which had been exposed to fire. This cairn was 28 ft. in diameter and 5 ft. high. Beneath it was a space from which the turf on the original surface level had been removed

down to the chalk rock, and in the grave thus formed from north to south was a deposit of burnt bones underlaid with wood and covered by a layer of charcoal and wood-ashes, no doubt collected from the funeral pile. At the south end lay the incense-cup (Case 25, fig. 73) and what seems to have been its cover. Both these parts were found much broken but in a clayey mass together; and the lower portion is very similar to one from



FIG. 73.—‘Incense-cup’ with cover, Aldbourne, Wilts.  $\frac{2}{3}$

Beckhampton, Wilts. (Case 95). The ware is good but soft, and the ornament, which extends also to the bottom and the inside of the cover, is characteristic of the period. The upper part is, however, much thicker, rather clumsy as a cover, and evidently intended for suspension, as the knob is pierced. Among the burnt bones were also pieces of a small bronze knife and of two bronze awls, all having apparently passed through the funeral fire. Seven beads were also found, three of pale-green faience (like

fig. 89), two of amber, a barrel-shaped specimen of lignite, and one made from the stem of an encrinite. Close to the beads was a large flat ring of lignite, a pendent ornament of the same material, a conical button of shale, a cast of a *cardium* shell, and a small polished pebble of haematite. A few inches beyond the north end of the grave was another incense-cup with a few scattered burnt bones, with similar ornament but of inferior fabric. It had, however, a peculiarity of rare occurrence in this country. The decorative incisions, produced probably by a bronze pricker, have been filled in with some white material like finely powdered chalk, probably applied in a semi-liquid state, like the 'slip' of Roman and later times.

Among the ashes covering the bones were six unburnt flint flakes, and among the sarsen-stones of the cairn were many bones of ox and pig, some teeth of oxen, two flint arrow-heads, one being barbed and unburnt, the other triangular and partially calcined; and the end of a boar's tusk which had apparently been fashioned. In the earth above the cairn were nine sherds of pottery, including two pieces of large thong-marked vessels, and part of a beaker filled in with white like the incense-cup just mentioned, and some flakes and chippings of flint, all unburnt.

Much the same might be said about the material of other Round barrows in this country. There are often signs of earlier interments with unburnt human bones (here indicated by the beaker), and relies of what may be regarded as the funeral feast, where the ox and pig were the usual viands, the bones generally split for the extraction of the marrow. Chips of flint, arrow-heads, &c., may have been lying on the surface when the adjoining soil was thrown up to form the barrow.

The above are selected cases of the four main types of pottery; but there are many other objects found in the graves, the most interesting and important being the three solid chalk drums (fig. 74), engraved all over with geometrical and other designs, that show connexion with the Aegean culture of the Mediterranean. A barrow on Folkton Wold, East Riding, Yorks., 54 ft. in diameter, had been reared over a central cairn containing two adult skeletons and a beaker; and round the cairn, at a distance of about 12 ft., a trench had been dug below the original surface. Outside this, about 22 ft. from the centre, another trench had been driven at the same level, but only on the eastern half of the circle. In this trench, east of the central cairn, was the burial containing the chalk drums, while in other parts of the area, on or about the original level, were several other unburnt burials, without any trace of bronze. The relative date of the drums is therefore determined not by their position in the barrow, but by their ornamentation. Both Canon Greenwell and Sir Arthur Evans drew attention to similar representations of the human face

(fig. 75, nos. 1, 3) on early objects from Hissarlik and the Greek Islands ; and a small statuette from Pamphylyia with this feature is shown in Case K (fig. 176). The same motive occurs on the sculptured menhirs (standing stones) of the Marne and Gard valleys in France, while clay vessels with this ornament, belonging to the early age of metal, were found in Spain by the brothers Siret. The 'butterfly' (fig. 75, no. 2) is seen on gold roundels from the earliest (shaft) graves at Mycenae, and the 'double horse-shoe' (fig. 75, no. 1 a) recalls the remarkable sculptures at New Grange, co. Meath, and Gavr'inis, Brittany. Above all, the degenerate spirals (fig. 75, no. 2 a) are a reminiscence of Aegean art, and everything points to the transmission of that influence to the British Isles by way of Spain.



FIG. 74.—Chalk drum, Folkton, E. R. Yorks.  $\frac{2}{3}$

The barrow at Kelleythorpe, Driffield, East Riding, Yorks., contained as many as ten burials, but none cremated : with one were found a food-vessel and the bone object exhibited, and this may have been earlier than the cist, which was below the original surface (like fig. 56), and contained a crouching skeleton. On the right wrist was the bracer (bowman's wrist-guard), which was fastened with a strap and small bronze buckle, the latter being found underneath the bones. At the back of the body were the bronze dagger and a beaker, while round the neck had been attached three amber beads, with the under side flat and the V-shaped perforation characteristic of the early Bronze Age in these islands. A mass of linen-cloth lay under the entire length of the skeleton, and was no doubt used as a winding-sheet. This burial is remarkable in more than one particular. Here a beaker is found

with bronze (as in a few other cases in Yorkshire): the bracer is found in position, though the wearer must have been left-handed, and its gold studs confirm the early date assigned to the remark-

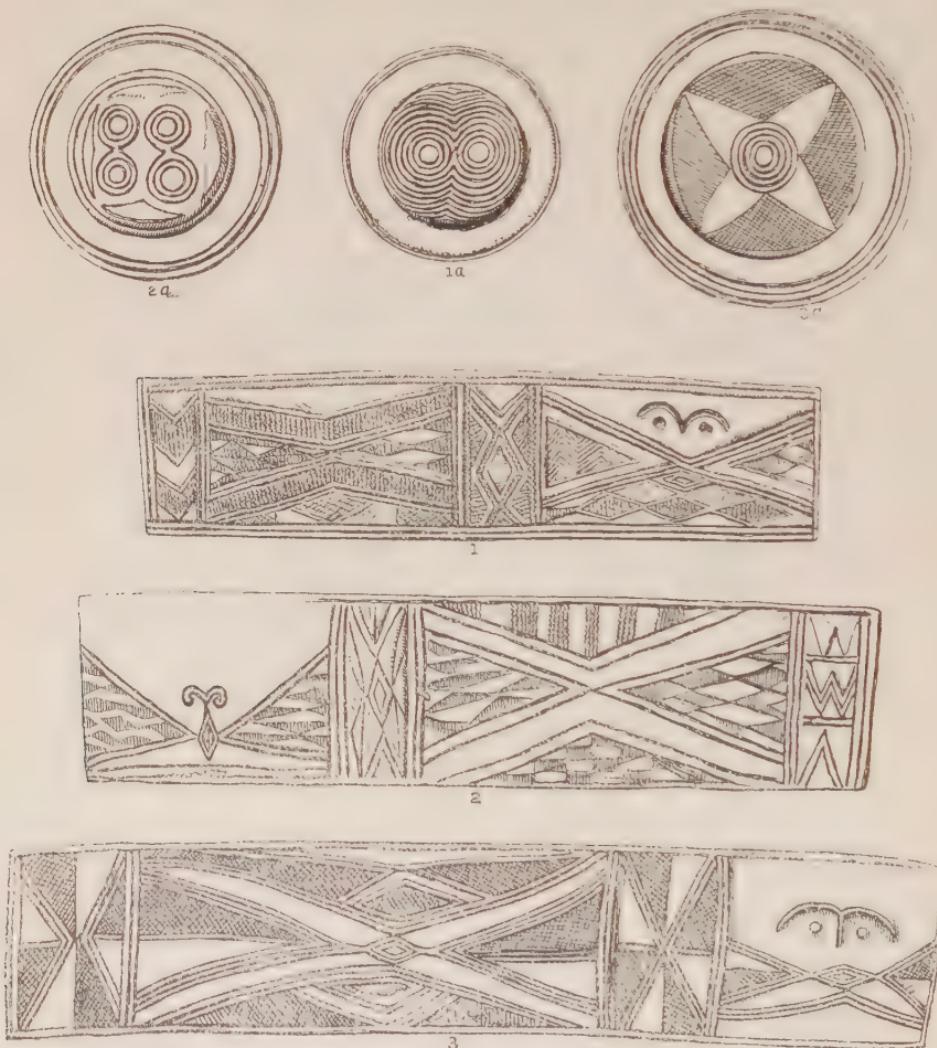


FIG. 75.—Ornamentation of chalk drums, Folkton. 1

able spear-head in Case O. The buckle is unexpected, but seems contemporary, whereas another at Great Tosson, Northumberland, was associated with an iron spear-head in a barrow containing food-vessels.

The celt from Butterwick, East Riding of Yorkshire (xxxix, Case 35), was found in a primary grave, and had evidently been slung from the waist of a young man, the wooden handle being traceable for nearly two feet. In his right hand had been held a bronze knife-dagger, of which the ox-horn handle and wooden sheath could be discerned, and above the dagger a flint knife, while below it was a bronze awl. On the breast were six buttons of jet and

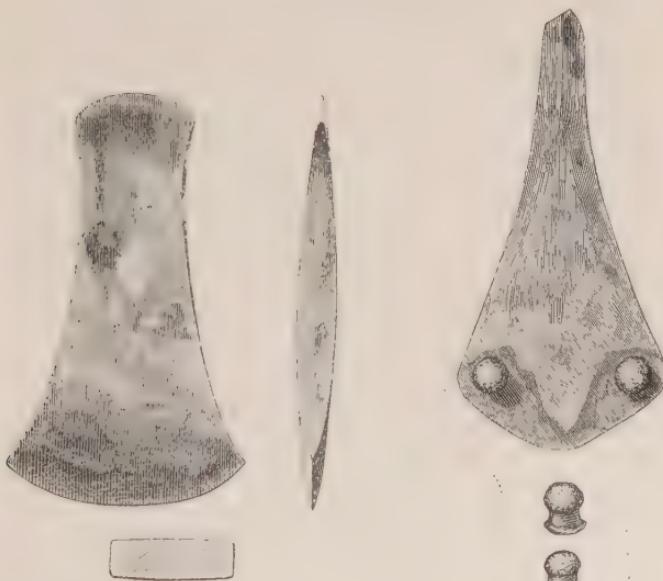


FIG. 76.—Primitive celt, Butterwick, E. R. Yorks.  $\frac{1}{2}$



FIG. 77.—Knife-dagger with remains of handle, Helperthorpe, E. R. Yorks.  $\frac{1}{2}$

sandstone, with V-shaped perforations, used to fasten the dress. The grave was thus richly furnished; and the form of the celt (fig. 76), evidently derived from a stone prototype, shows this to have been a burial of the early Bronze period, an analysis of the celt showing 87.97 per cent. copper, and 10.74 per cent. tin. A dagger from Helperthorpe, East Riding of Yorkshire (xl ix, Case 28), gives the original proportions of the handle, though the ox-horn plates have perished (fig. 77). The point of this, like that

of the Butterwick dagger, was touching the chin of the skeleton ; and the blade was doubtless reduced to its present shape by repeated whetting.

Celts of the primitive flat-type are sometimes found with interments in barrows (as fig. 76 : others in Derbyshire and Wilts.), and four good examples of the type, shown among the hoards (Case 57), were lying on their edges close together 6 in. above the original surface, and 8 ft. east of the centre of a barrow on the Wold Farm, Willerby, East Riding, Yorks. Three of them are

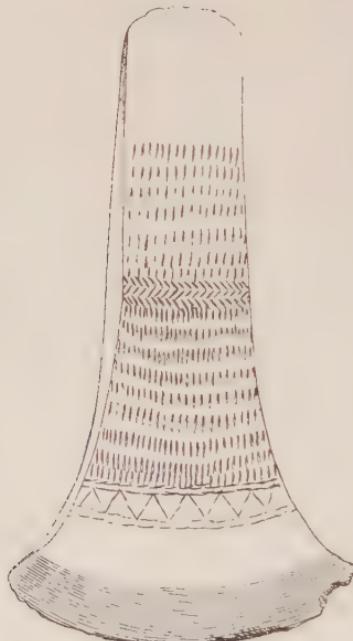


FIG. 78.—Ornamented celt, Willerby, E. R. Yorks.  $\frac{1}{2}$

ornamented (fig. 78), and all have a surface like glass. There were no signs of disturbance and they were apparently deposited at the time of the erection of the mound, perhaps as a votive offering rather than as grave furniture. A flanged celt (analysis on p. 114), and a looped and socketed specimen are said to come from barrows on Plumpton Plain, Lewes ; also a looped palstave from a barrow at Icklingham, Suffolk.

Conical buttons of jet with V-shaped perforations are commonly found in Barrow deposits ; and are shown in glass-topped boxes under their respective countries. They are often engraved on the top, and one illustrated from Rudstone, East Riding of Yorkshire

(fig. 79), was found with other objects beside a male skeleton (LXVIII, Case 25). It is decorated with a cross, not an uncommon design at that period, and lay just under a jet ring (like fig. 80) with similar perforations from the circumference. The equivalent of a 'flint and steel'—a flint flake and nodule of iron pyrites (*Stone Age Guide*, fig. 94)—was found in the same grave near the skull. A jet ring (fig. 80) was also found resting on a button of

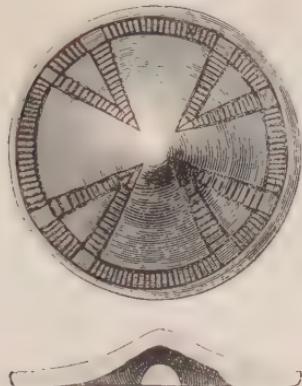


FIG. 79.—Jet button with section, Rudstone, E. R. Yorks.



FIG. 80.—Jet ring, Thwing, E. R. Yorks.

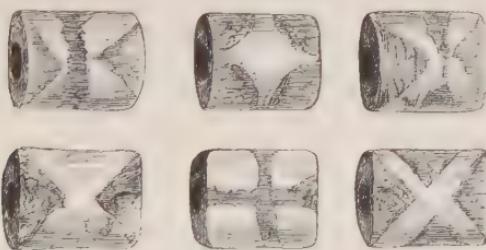


FIG. 81.—Bone beads, Folkton, E. R. Yorks.

the same kind at Thwing, East Riding, Yorks., on the right arm of a skeleton (LX, Case 10). Ornamented bone beads or buttons of another shape (fig. 81) are remarkably like those from Lake, Wilts. (Case 9) which, however, are not perforated. The three with ornament lay at the right elbow of a young woman's skeleton at Folkton, East Riding of Yorkshire (LXXI, Case 28), while a plain one was found, with a bronze drill or awl, below the hips. The number is the same as at Lake, and the cruciform patterns in both cases were produced by burning the surface with a sharp-pointed instrument.

Among several examples of jet buttons with **V**-shaped perforations should be noticed one of very small bore, found with a bronze celt and skeleton in Soham Fen, Cambs. This specimen, like one from Pen-y-Bone, Holyhead, was perhaps attached to a necklace like that illustrated from Scotland (fig. 104). A remarkably large bead of jet (fig. 82), from a barrow near Bridlington, resembles some found in Ireland, and there can be no doubt that most of the ornaments of that material here shown were made and in use when metal was known.

Among other forms of jet may be mentioned the runner or slide from Hambleton Moor (fig. 83) and the toggles or studs from

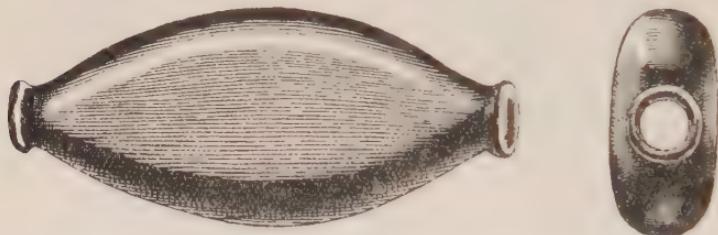


FIG. 82.—Jet bead, Burton Fleming, Bridlington, E. R. Yorks.  $\frac{2}{3}$   
Jet button, Fylingdales, Scarborough, N. R. Yorks.  $\frac{2}{3}$



FIG. 83.—Jet slide, Hambleton Moor, N. R. Yorks.  $\frac{2}{3}$

FIG. 84.—Jet button, Fylingdales, Scarborough, N. R. Yorks.  $\frac{2}{3}$

Fylingdales (fig. 84), probably for fastening the dress in some way. A flattened jet ring with pierced projections seems to belong to a common type of pendant, and may be compared with one of faience from Lewes (fig. 85), and others of bronze from Exning, Suffolk, and France (Case E).

Beads of lignite (an inferior form of jet) are also found occasionally: those from the Devil's Dyke, Brighton, were lying on the neck of a skeleton with bronze beads of cylindrical form, the grave also containing a beaker (Case 13). Other shale beads, were found with pottery and unburnt human bones in a cairn on Dale Moor, Crosby Ravensworth, Westmoreland.

Jet was not the only material used for conical studs with **V**-

boring. Specimens are found abroad of bone, ivory, amber, and various stones, and were certainly first manufactured in the late neolithic period. They were probably used as buttons; and though amber might have been procured locally, the association of such studs with bracers and sandstone rubbers for smoothing the shafts of arrows (fig. 86), both here and abroad, proves at least trade relations with the Mediterranean as far back as the neolithic period, for at Hissarlik (site of Homeric Troy) such rubbers can be approximately dated, and they occur in Hungary, Spain, France, Western Germany, and Denmark. That from Normanton Down, Wilts., here illustrated (one of three from a barrow) has a crooked groove, and can hardly have been used in this way, though possibly intended for such use.



FIG. 85.—Faience pendant,  
Mt. Caburn, Lewes, Sussex.

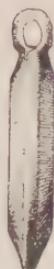


FIG. 86.—Arrow-shaft smoother,  
Normanton Down, Wilts.  $\frac{1}{2}$

In connexion with the bow, it may be mentioned that the bracer or wrist-guard is also international, though not always recognized as such. The type is found also in Italy, Spain, France, and Scandinavia including Slesvig; and though the recoil of the bowstring might stimulate independent invention, such an argument would not apply to other widely-spread types such as the stud with V-boring. In addition to the bracers already mentioned from Suffolk (fig. 59) and Driffield (p. 81), one with two holes is exhibited from Sittingbourne, Kent, where it was found in a grave with a primitive tanged knife of bronze and a carved ornament of bone. That from Calne, Wilts., has four small holes at the angles for attachment no doubt to leather.

It is remarkable that contemporary arrow-heads were made, not of bronze as in France (Case E), but of flint, and were gener-

ally barbed and tanged, contrasting in this respect with the lozenge or leaf-shaped specimens (*Stone Age Guide*, fig. 149) of the late neolithic period. Of the two fine specimens chosen for illustration, one (fig. 87) was found between the skull of a crouching male skeleton and a food vessel in a barrow (LXIII) at Rudstone, East Riding, Yorks.; and the other (fig. 88) is one of a group found at the foot of a skeleton in a small ring-barrow on Lambourn Downs, Berks. Barbed and tanged arrow-heads have also been found with cinerary urns.

Remains from round-barrows in Wiltshire (Cases 8, 9) illustrate the peculiar richness of that county; and the Aldbourne barrow has already been described (p. 78). There are, unfortunately, few details as to the discovery of the large amber necklace in this Case. Sir R. Colt Hoare found it in a barrow at Lake, Wilts., and



FIG. 87.—Flint arrow-head, Rudstone, E. R. Yorks.

FIG. 88.—Flint arrow-head, Lambourn Downs, Berks.

concluded that it had belonged to a lady of high rank, on whose neck it had been buried. From the same grave as the amber necklace came a pair of gold earrings, and a number of ribbed cylindrical beads (fig. 89), such as occur at Tan Hill and Syrencot Down in the same county, also in Dorset and Cornwall. They are of faience (glazed pottery) such as was common in ancient Egypt, but appear to be of local origin.

Their date has been much discussed, and the extreme limits assigned are about 1350 B.C. and the earliest Iron Age (Hallstatt period). Sir Arthur Evans has pointed out that the date given by Prof. Montelius (2000-1650 B.C., his second period) is too early, as the 18th Egyptian dynasty, of which this faience is characteristic, did not begin till 1580 B.C. The material takes the form of multiple or segmental beads (as fig. 89), quoit-shaped pendants (as fig. 85), and beads of star and barrel forms (as two from Cairn Boscregan, St. Just, Cornwall); and as some of these are not represented in Egypt nor on the continent of Europe, it is unnecessary to assume any traffic with Egypt. In any case they

were not brought by Phoenician traders, as Crete was then the leading naval power in the Mediterranean. Some like fig. 89 appear to have been found in Spain (Fuente Alamo).

It has been pointed out by Mr. Ludovic Mann that these beads are common in Scotland, especially in Wigtownshire, and seem



FIG. 89.—Faience beads, from Wiltshire.

to be manufactured from a by-product of bronze. Long burial in the soil has often reduced the intensity of the colour and disintegrated the material; but the best preserved are still of deep turquoise blue.

Little can be said of the dress-materials, but textile can be recognized on a bronze blade in the Lambourn Downs series, and woollen material from Driffield,

Yorks., has already been mentioned (p. 81). Spindle-whorls showing that the art of spinning was known in the Bronze Age were found in Heathery Burn Cave (pp. 49, 50). Several bone pins or skewers, probably for pinning the cloak, are shown; but the most interesting objects of this material are four rectangular plates from Lake, one side being convex but both ornamented, and closely resembling those illustrated from Folkton (fig. 81). Some fine examples of the riveted dagger-blade characteristic of the Barrow period, include one with five rivets (fig. 90) from Homington, and another from Syrencot Down clearly showing the outline of the haft at the base of the blade. The edges of these daggers are sometimes curved inwards or outwards, and sometimes practically straight.

A discovery of considerable interest on Lansdown Links, near Bath, was reported in 1905, and the principal find is here exhibited. A round barrow contained a cist about 2 ft. in diameter with a covering stone

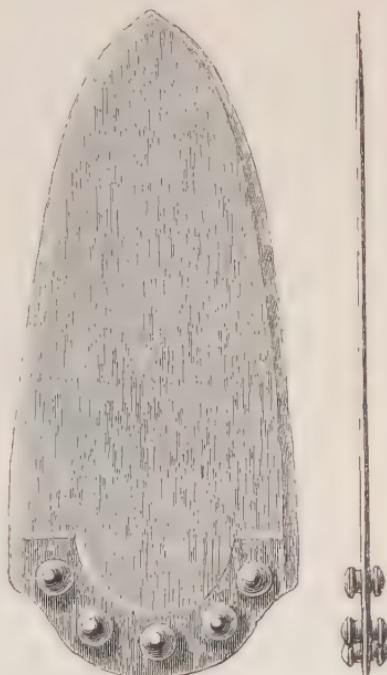


FIG. 90.—Knife-dagger, Homington, Wilts.  $\frac{1}{2}$

nearly in the centre. It had been previously disturbed but not properly examined. Fragments of at least two cinerary urns were found with burnt bones, and minute fragments of what seems to have been a gold sun-disk with copper backing (fig. 91). The diameter was about  $6\frac{3}{4}$  ins., and enough remains to enable the embossed star-pattern to be completed. Further details of such finds in Ireland and Denmark will be found at p. 110; and the association with cremation in the present instance points to the latter half of the Bronze Age.



FIG. 91.—Design on sun-disk, Lansdown, Bath.  $\frac{1}{2}$



FIG. 92.—Stone axe-hammer, Lambourn Downs, Berks.  $\frac{1}{2}$

The stone axe-hammers from Yorkshire (as fig. 94) belong to types that must have survived well into the Bronze Age, and are sometimes found even with cremated interments in England, though in Scotland they may belong in some cases, as normally in Scandinavia, to the neolithic period.

As an instance in the south of England may be mentioned a well-made stone specimen (fig. 92) found with one of deer-antler (fig. 93) in association with a burnt body at Stancourt, Lambourn, Berks. Here the ends have an almost equal expansion, though one edge is sharper than the other, the perforation

being straight, and not of the hour-glass pattern common in neolithic specimens. Other examples, from unburnt burials in Yorks., have the cutting edge more or less expanded and the

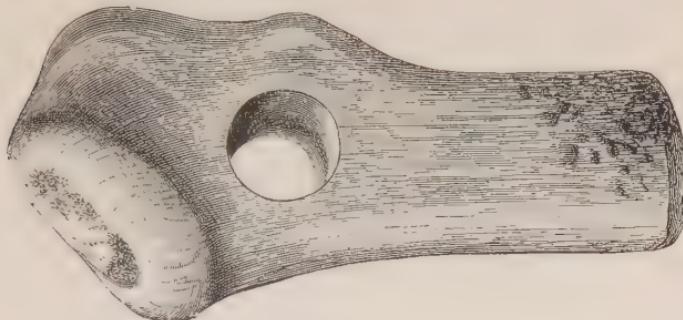


FIG. 93.—Deer-antler hammer, Lambourn, Berks.  $\frac{1}{2}$

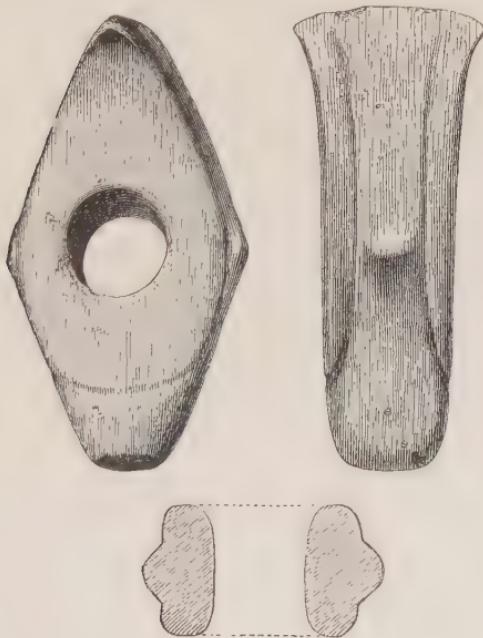


FIG. 94.—Stone axe-hammer, Gerrick Moor, N. R. Yorks.  $\frac{1}{2}$

opposite end heavy and rounded; whereas Yorkshire specimens found with cremated burials have the hammer-end in the form of a truncated cone (fig. 94). The elaborate example said to be from a barrow near Stonehenge (fig. 95), has a parallel in the same

county (Selwood barrow, near Stourton), which lay in a cist with burnt bones and a small bronze dagger; but in comparison with

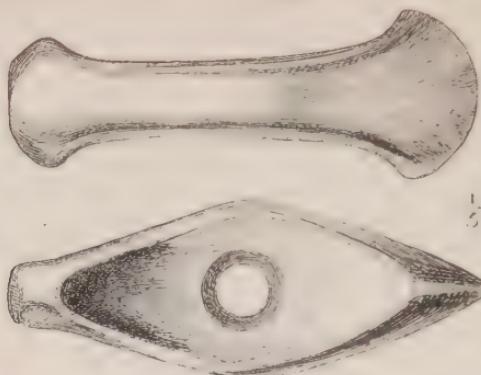


FIG. 95.—Stone axe-hammer, near Stonehenge, Wilts.

Denmark, our axe-hammers or battle-axes are rare, and it is difficult to fit British specimens into the Scandinavian series.

That flint daggers belong at least in part to our early Bronze Age is clear from associated finds in barrows and comparison with Scandinavian parallels; and several from England are here exhibited besides a fine example from a barrow on the Lambourn Downs, Berks. (fig. 96). Besides bronze and jet from the same site, there are several flakes and finely-made arrow-heads of flint, nearly all of the same white patina; but unfortunately the record is imperfect, and it is anything but certain that all are contemporary. There is better evidence of date in Yorkshire, Derbyshire, Wiltshire, Somerset, and Brecknockshire, where such daggers are normally accompanied by beakers and buttons with V-boring; and in only one instance (at Three Lows, Wetton, Staffs.) has a flint dagger been found with a cremation. The Museum possesses a fine series of these daggers, most of which were found in isolation; but more than one variety has been found in Bronze Age burials, and as a class they may be taken as



FIG. 96.—Flint dagger, Lambourn Downs, Berks.  $\frac{1}{2}$

dating from the last phase of the neolithic and the first half of the Bronze Age (corresponding to the passage-grave and cist periods of the neolithic in Scandinavia)

### WALES

Cases 96-98; 92 (opposite) and 6 and 7 (below).

The two bronze bucklers from Wales, which make almost a pair (diams.  $25\frac{1}{2}$  and  $26\frac{1}{2}$  in.) in perfect condition, have already been noticed on p. 43; and the relic next in importance is an

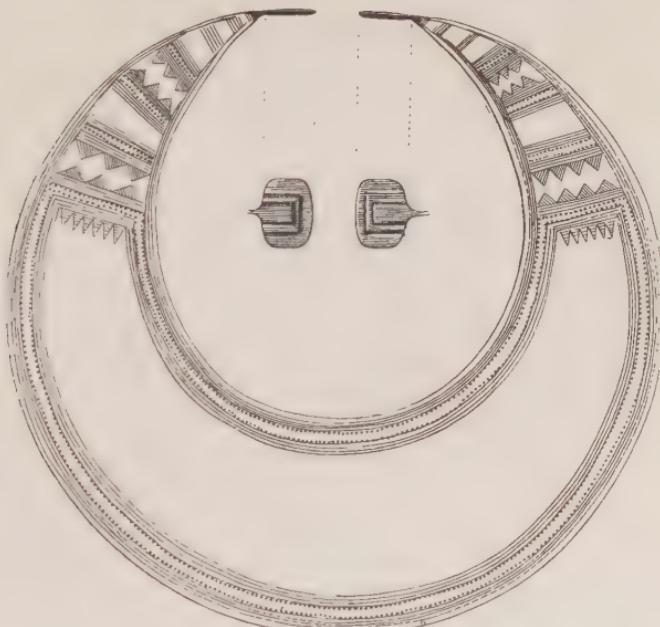


FIG. 97.—Gold lunette, Llanllyfni, Carnarvonshire.  $\frac{1}{3}$

example of the Irish lunette or crescent (fig. 97) from Carnarvonshire, made of a flat gold crescent with the terminals in a plane at right angles. This type is dealt with under Ireland (p. 108), and it may be noted that the only specimens found in England and Wales come from the west coast, easily accessible from Ireland (besides this, four from Padstow (2), Penzance and Lesnewth in Cornwall), though the type reached Lanarkshire (2), Dumfriesshire, and even Elginshire in Scotland.

A piece of gold armour (plate VII) formerly known as the Mold corslet, is now seen to be a peytrel (French, *poitrail*) or brunt for a pony. It is mounted on a copper plate as originally worn, fragments of the lining being shown at the side; and was found

in 1833 with a man's bones in a cist which had been covered with three or four hundred loads of pebbles and other stones, forming a cairn called Bryn yr Ellyllon (Hill of the Fairies or Goblins), near the river Alun at Mold, Flintshire. There were also in the cist many amber beads and remains of coarse cloth, which had been fastened round the edges of the peytrel as a fringe (fig. 98). Traces of iron are also said to have been noticed, and two or three yards from the spot was found a cinerary urn. A romantic story is also told of the discovery, which had been attributed to second-sight ; and several pieces, including the gold straps for fastening, were lost after the peytrel had been thrown aside as worthless. Several of these pieces have been recovered, and presented at intervals by various donors. The depth at the centre ( $8\frac{1}{2}$  in.) can be exactly determined, as the upper and lower borders (in which are holes for attaching the fringe) are still preserved ; and the present length is about 3 ft. 7 in., but it is not complete at either end.

The size is well adapted for a pony of about twelve hands, like the famous Welsh breed of the present day. The thin gold plate is embossed in a style resembling that seen on the bucklers from Wales and elsewhere ; but a richer variety of patterns is here employed, consisting of circular bosses of two sizes, pyramidal rivet-heads, pointed ovals, and other bosses of quadrangular shape, separated by simple raised lines. A discovery of this kind demonstrates in a striking manner the abundance of gold at the end of our Bronze period. It is obvious that before a warrior would decorate his horse with the precious metal, he had doubtless satisfied his own personal needs in this direction.



FIG. 98.—Mold peytrel on pony.

Among other gold finds in Wales may be mentioned two hollow and angular penannulars, closely resembling that found in Heathery Burn Cave (fig. 33). They are associated with two gold bracelets having the terminals thickened, and were found at Gaerwen, Anglesey. Similar bracelets come from Beaumaris, Anglesey ; and a torc  $4\frac{1}{2}$  ft. long (now coiled) with four flanges and club-terminals, closely resembling that from Staffordshire, was found on the border of Glamorganshire and Brecknockshire.

Two jet and one bronze ring with lateral perforations, recalling the heavy bronze rings from Ireland (fig. 110), were found, with a razor, at Heneglwys, Anglesey, the hoard also including a pair of tweezers (as in hoard from Feltwell Fen, Norfolk) and a looped wire bracelet resembling that from Heathery Burn Cave (fig. 33).



PLATE VII. GOLD PEYFREL, MOLD, FLINTSHIRE.

(See p. 93)



Several plates and spindle-shaped beads from Pen-y-Bone, near Ty Mawr, Holyhead, belonged to a jet necklace, to which may also have been attached the conical button with **V**-boring. The plates are devoid of ornament, but the necklace belongs to a common type, best represented in Scotland (fig. 104), specimens also being known of bone and amber. In this connexion jet is taken to include inferior qualities, such as lignite, shale or cannel coal; and it may be mentioned that both amber and jet become electric when rubbed, and may have been prized in ancient times for magic qualities.



FIG. 99.—Pottery\* from cairn near Swansea, Glamorganshire.  $\frac{1}{4}$

Five miles from Swansea, Glamorganshire, was a cairn 90 ft. in diameter and 4 ft. high, at a place called Mynydd Carn Goch (the Waste of the Red Cairn). Within the circumference was a ring of stones almost concentric, a few inches below the surface of the mound. The largest vessel of the three (fig. 99) shown together was east of the centre, buried below the original ground-level, the interstices of the grave being filled with charcoal and the whole covered with a flat stone. The other urn was above the original surface, inverted on a flat stone; and the incense-cup was near the western edge of the cairn. The bones were principally inside the urns, but throughout the cairn were large layers of charcoal, thickest in the vicinity of the burials.

Of the two urns from a barrow at Colwinston, in the same

county, the taller was found near the centre on a stone slab, with other slabs built round and one placed on top. It was full of burnt bones, among which was a calcined bone pin, 2 in. long, with a large eye; pins of this kind were often used to fasten either a cloth in which the ashes were collected from the pyre, or the garment on the body before cremation. The other was 2 ft. distant, also protected by slabs of stone and a well-fitting cover, which shows that the skeleton of a mole, and many lower jaw-bones and ribs of mice, which were found above the human ashes, were deposited in the urn before interment.

A cinerary urn (fig. 100) sometimes associated with Bronwen the Fair, daughter of Llyr, was found in 1813, containing the burnt bones of a woman. On

one fragment was noticed a slight green stain as of bronze, and the form and quality of the urn suggest the later Bronze Age. It was inverted in a cist of flagstones within a cairn about twelve paces from the River Alaw, in what is known as the 'islet of Bronwen' (Ynys Bronwen), Anglesey. It was at or near this spot that the aunt of Caractacus is said to have been buried about A.D. 50, but the cinerary urn is probably earlier by some centuries, and was itself interred in an older grave, to which some unburnt bones and fragments of a beaker found at the same time no doubt belonged.

Other sepulchral pottery from the district also shows certain

FIG. 100.—Cinerary urn, inverted,

Ynys Bronwen, Anglesey.  $\frac{1}{2}$

peculiarities of texture and decoration. On the shore of Porth Dafarch, a small harbour in Holyhead Island, was a mound 30 ft. in diameter which had been lowered by ploughing, the stones that formed a cairn being scattered about. Under a large flat stone was a cinerary urn containing the smaller urn with herring-bone decoration. The former measured 13 in. at the mouth and was ornamented within the lip, but only the fragment here exhibited was preserved. A second interment was close by, of a similar character: a larger urn containing among the ashes the smaller one with incurved lip.

In many parts of Anglesey, but especially near Holyhead, are to be seen groups of low mounds on rough, uncultivated ground,



which on examination prove to contain circular walls of stone, partly demolished and overgrown with turf, gorse, or bracken. The space enclosed by these walls is generally from 15 to 20 ft. in diameter, with the opening always facing the south-east, and having two large upright stones about 4 or 5 ft. high as door-posts. These sites of human habitations are usually in clusters of five or more, but at Ty Mawr on Holyhead mountain form a village of more than fifty huts. Such settlements are usually situated so as to be sheltered by rising ground from the north-west winds, and are generally protected from hostile attack by rude walls of dry masonry or by precipitous rocks. From time immemorial they have been known as *Cyttiau'r Gwyddelod* (huts of Irishmen or Aborigines), and may have been originally roofed by converging stones laid horizontally, forming bee-hive huts such as occur in Ireland and elsewhere ; but it is more probable that



FIG. 101.—View of hut-circle, Ty Mawr, Holyhead.

the roof consisted of turf supported on horizontal poles. Though the absence of metal in many cases affords a presumption that these dwellings belong to the Stone Age, bronze implements have certainly been found on more than one occasion as well as a mould for casting them ; and traces of occupation in Roman times are abundant and unmistakable. A discovery of Late Keltic remains has also been made on the site of ' Irishmen's huts ' at Treceiri, on one of the peaks of Yr Eifl, Carnarvonshire (Iron Age Gallery, Case 25).

Of the hut-circles two kinds have been excavated in Anglesey, chiefly by the Hon. W. O. Stanley. In 1862 a typical mound at Ty Mawr contained what seems to have been simply a dwelling-place, the illustration (fig. 101) showing the enclosed area divided into compartments by upright stones ; and against the partitions, as well as the inner wall of the hut, were upright slabs forming what are considered to have been fireplaces. The circles contained flat and round stones, all bearing traces of fire, the former

perhaps used for baking food, the latter for boiling water in skins or other receptacles. Implements of gritstone for grinding corn were also found, as well as remains of shell-fish in a heap. The ground-plan (fig. 102) shows the arrangement of another type of buildings, perhaps used as workshops for smelting and working metals. The fireplaces were constructed of large stones, generally in the centre of the hut, with small fireplaces flanking the central one or arranged round the wall of the building, in some instances with a well-formed chimney in the thickness of the hut-wall. The rude stone pounders or mullers, the mortars or basins and

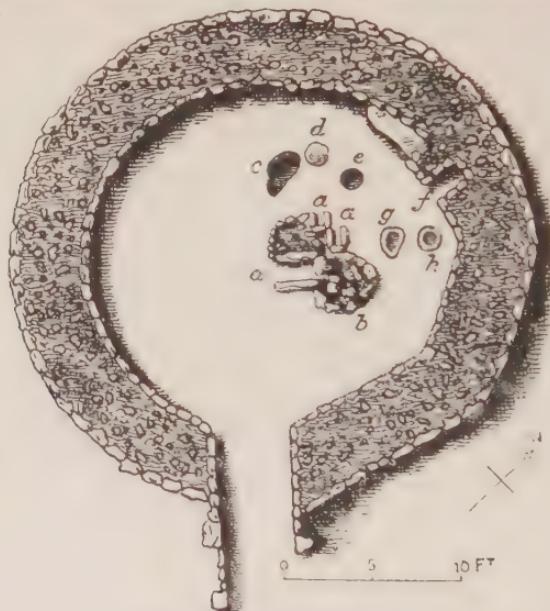


FIG. 102.—Plan of workshop, Ty Mawr, Holyhead. *a*, fire-place; *b*, platform; *c*, hole containing sharpening-stones; *d*, pounding-stone; *e*, hole; *f*, fireplace and chimney; *g*, rubbing-stone; *h*, mortar.

heavy flat stones set in the floor for grinding or breaking stone or some hard material, presented no appearance of having been used for preparing food. Broken quartz from the copper lode in the neighbourhood, slag and clay-lined fireplaces, point to the smelting of copper and iron ore; and in this connexion may be mentioned the bronze implements (Case 96) found together under a stone in one of the Ty Mawr huts, as well as a mould for casting spear-heads and celts of the same form, found in Anglesey. Whereas in the rude dwellings the saddle-back querns and mullers were of gritstone, the grinding and pounding-stones found in the supposed workshops are of hard trap, well adapted for crushing the ores of the district.

More advanced domestic implements are found at Pen-y-Bone in connexion with Roman coins of the first and second centuries, as well as 'Samian' ware and cinerary urns of Roman origin. The quern or hand-mill is generally held to have been introduced about the Christian era, and Agricola is known to have conquered and settled Anglesey about A. D. 78; but though these remains, like a carnelian intaglio found at Porth Dafarch, are undeniably connected with Roman civilization, there can be no doubt as to the much earlier date of many of the structures.

#### SCOTLAND: Cases 87-91.

The small series from Scotland comprises most of the pottery types, and beakers are well represented. One that may serve as



FIG. 103.—Urn and bone implements, Cawdor Castle, co. Nairn.  $\frac{1}{3}$

an example of Lord Abercromby's class C is here illustrated (fig. 103), the body being rather angular and the mouth expanded. It was found in a cist (or box of stone slabs) at Inchmacaorach, near Cawdor Castle, co. Nairn, with three rude bone implements in association with a crouching skeleton. Beakers of this type are characteristic of Scotland, and Northumberland north of the Roman Wall.

Anatomical examination shows that the chambered cairns of Arran and South-west Scotland were used for burials by a Nordic race, tall, long-headed, and probably fair, but corresponding to the long-barrow race in England; whereas short cists of the early Bronze Age, especially in Aberdeenshire, contained remains of

a squat and bullet-headed race, almost Slav in appearance, resembling the special brachycephalic type found to-day in the upper valleys of the Elbe and Rhine. It may be added that cist-burials mark the last stage of the neolithic in Jutland, when the interior of the peninsula was overrun by people from the south, burying in the so-called single graves.

The two cinerary urns from Tealing, Forfarshire, were found within a barrow above a stone cist which contained a crouching male skeleton with cephalic index of 73, clearly dolichocephalic (p. 17). It is possible that the burnt and unburnt burials were in this case contemporary. At Kilmartin, Argyllshire, a cairn 110 ft. in diameter and 13½ ft. high, was surrounded by two incomplete rings of standing stones and enclosed two cists, the primary at the centre containing no human bones except traces of unburnt burials and a food-vessel covered with ornament, and resembling some from the same part of Scotland and from Ireland in the adjoining Case. The beaker from Ballymenach, near Kilmartin, was found in a disturbed cist within a mound 95 ft. in diameter, near cup-marked stones; the fragments lying mixed with unburnt bones in sand and gravel. The third vessel from this neighbourhood is a bowl like one from Heslerton, East Riding of Yorkshire (Case 26), and was found in a chambered cairn on Largie Farm, originally 134 ft. in diameter. The central cist was over 19 ft. long, nearly 4 ft. wide and 9½ ft. high, the sides, walls, and roof being formed of large slabs of chlorite schist, with smaller stones in the interstices. Four compartments had been formed by three vertical cross-slabs 2½ ft. high; and in the compartment at the south end, which had an altar-like slab raised from the floor (as at Tregeseal, Cornwall, Case 12), the bowl lay near a small cist in an undisturbed layer of dark matter and burnt bones, but being of neolithic type is unlikely to have been associated with a burial after cremation.

The Melfort jet necklace (fig. 104), which was found with two bronze armlets (now at Edinburgh) in a cist containing an unburnt skeleton, is a fine example of its class, comparable with that of amber from Lake (Case 9). About thirty have been found in Scotland, and tabulated by Mr. J. G. Callander. Most of the crescentic type and the single-string necklaces of small disks accompanied beakers or food-vessels in unburnt burials, enclosed in stone cists beneath cairns.

The great find of gold torcs at Urquhart, near Elgin, in 1857 is represented by seven specimens, the hoop being a simple twisted ribbon and the ends hooked. A large piece of ring-money with a covering of gold foil was found under 4 ft. of peat on the banks of the Chebat, Glenavon, Banffshire, and is one of many cases in which the ring-money was not made of solid gold. A recent acquisition is a specimen of the handle-type of what is considered

Irish gold currency (like fig. 116), which presumably reached Islay off the west coast direct from Ireland.

Specimens from Scotland (in lower part of Case 88) illustrate most of the stages in the evolution of the celt; and three found



FIG. 104.—Jet necklace,

Melfort, Argyllshire.  $\frac{1}{3}$

together on Balcarry Farm, shire, are specially interesting from the winged type stave. Some of the smaller Irish type (as fig. 107), with short body.

Of the two leaf-shaped Farm, Tarves, Aberdeenshire, announced shoulders (p. 32)

swords found at Ythsie shire, one has more pronounced shoulders (p. 32) than the other, and the preservation of the bronze pommel is quite exceptional. The handle of this sword (fig. 105), has two depressed surfaces for inserting plates of bone or horn to form a grip, and is peculiar in having a ridge across, defining the lower edge of the hilt. Comparison may



near Kilfillan, Wigtownshire, as showing the transition (as fig. 124) to the pal-socketed celts approach the broad cutting-edge and

swords found at Ythsie shire, one has more pronounced shoulders (p. 32) than the other, and the preservation of the bronze pommel is quite exceptional. The handle of this sword (fig. 105), has two depressed surfaces for inserting plates of bone or horn to form a grip, and is peculiar in having a ridge across, defining the lower edge of the hilt. Comparison may



FIG. 105.—Sword with pommel, pin, and chape, Tarves, Aberdeenshire.  $\frac{1}{6}$

be made with the sword, having a similar pommel cast in one piece with the handle, found in Yorkshire, and now at Alnwick Castle (cast in Case Q). The Tarves find included a short bronze chape of the type of fig. 12, and a pin of the 'sunflower' pattern, with disk-head bent over (as fig. 108).

## IRELAND

## Cases 54, 55 and 79-85; and table-cases O, P, Q.

The sepulchral pottery from Ireland is especially interesting as providing a link between the neolithic bowl (*Stone Age Guide*, fig. 156) and the food-vessel. As already mentioned (p. 69), there are reasons for supposing that the native population driven out by the 'beaker-folk' took refuge in Ireland, and there continued to develop the traditional type of pottery. The rounded base and deep moulding below the lip were gradually modified (pl. vi, nos. 4-6); and by the time the Bronze Age invaders were absorbed in Britain, the food-vessel had assumed an angular profile, but was still ornamented within the lip and unaffected by the beaker style. There is only one beaker find generally recognized in Ireland (Moystirra, co. Sligo), but the three other forms are fully represented, and examples are here exhibited. It will be observed that on the food-vessels the ornamentation of the period reaches its highest development. In co. Down more than fifty stone cists containing bones were found in one cairn, and in the north-west angle of each cist was a food-vessel containing a little blackish granulated earth.

It is, however, in metal-work that prehistoric Ireland played a leading part, and a large proportion of flat celts will be observed among the specimens in the lower part of the Pier-case. Though the exact localities are in many cases unknown, specimens of this kind have been found in most of the Irish counties, and are generally of copper, practically pure. In twelve analyses published by Mr. Geo. Coffey the copper is seen to vary from 96.46 to 99.44 per cent. of the whole, while tin and antimony combined range between a mere trace and 1.09 per cent. In the majority of cases the tin did not exceed 0.51 per cent., while seven of the twelve specimens contained no more than 0.1 per cent. of that metal. In such circumstances it is admissible to call these *copper* celts rather than bronze; and it is evident from their shapes that they immediately succeed, and are derived from, the stone celts of the neolithic period. The broadened cutting edge is essentially a metallic form, due to hammering; but the connexion with examples in stone is further illustrated by a curious reaction on the stone celt, some specimens of which display a broadened edge copied from the metallic celt in use during the transition period from stone to metal.

The earliest type, common in Ireland, is relatively broad, rounded at both ends; then appeared a square butt (fig. 3, *a*), which gradually became thinner and was sometimes rounded off, while the sides became straighter, giving a more slender appearance to the celt (fig. 3, *b*). Flanges formed by beating up the

edges are only seen in rudimentary form in the copper celts, while stop-ridges and ornament are altogether wanting in that metal. Examples of the more developed forms are arranged according to type, and special attention may be drawn to the hatchet pattern of socketed celt (fig. 106) and the numerous specimens with oval mouths and broad cutting-edge (fig. 107), both characteristic of Ireland.

The pins here shown are all of the last period of the Bronze Age; one has a side-loop like fig. 48 (below); and are all represented in Danish finds. The cup-shaped head may be compared



FIG. 106.—Socketed celt with loop, Ireland.



FIG. 107.—Socketed celt with loop, Dungiven, co. Derry.  $\frac{2}{3}$

with the terminals of gold bracelets from Ireland (fig. 114), and the large pin engraved with characteristic ornament is an exaggerated example of a common type, with the circular head bent over (fig. 108), much like a sunflower on its stalk. The implement here illustrated (fig. 109) is probably a flesh-hook, used ceremonially like that of the priests in Eli's time, and is the second found in Irish bogs: a third is published from Thorigné, Deux Sèvres, France. The middle section resembles several pieces, with simple rings in place of the birds, from France (Case E) and the Swiss lake-dwellings, and a hooked portion, evidently from an implement of the same kind, has been found in a hoard of bronze near Norwich.

Heavy rings with transverse perforations (fig. 110) are common

in Ireland, and are with reason supposed to have formed, with pins passed through the holes, brooches to fasten the dress in the same way as the pennanular brooches of the same country in the Viking period.

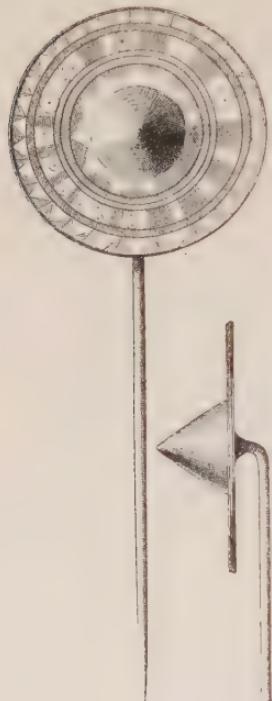


FIG. 108.—Pin of sun-flower type, Ireland.  $\frac{1}{4}$

Of special interest are examples of types also found in Britain—a winged shape like fig. 13, from Strabane, co. Tyrone; and a cylindrical spear-ferrule like that included in fig. 31, worn at the point by trailing on the ground, from Kilrea, co. Derry. A razor of oval outline without tang, resembling some from Scotland, was found in an urn with cremated bones near Ballymena, and two stone-moulds like fig. 122 for casting spear-heads show that this early form was made in Ireland. The corrugated disk from Inis Kaltra, an island in Lough Derg, in the form of a miniature shield  $4\frac{3}{4}$  inches across, looks like a local variety of the belt-ornament commonly found in Scandinavia. There is a bar across the hollow of the central cone that would take a strap.

Bronze swords from Ireland are exhibited together in one section of Case Q, and will be seen to correspond to those from Britain. About half have shouldered-blades (like pl. II, nos. 1, 3, 6), and out of a total of twenty-six, only one has a slotted tang (like no. 2).

A heavy tapering weapon, with a lozenge section, from Raphoe, co. Donegal, is hard to classify, but may possibly be a transitional form of early date. The tang has one hole for a rivet that passed through a collar, somewhat like the Snowhill spear-head (fig. 14);

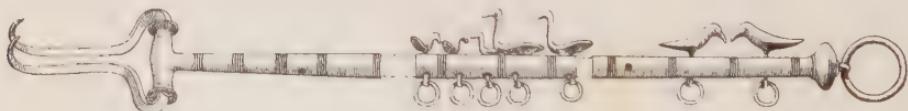


FIG. 109.—Flesh-hook, Dunaverney bog, co. Antrim.  $\frac{1}{6}$

but the length and weight of the blade and form of the tang suggest a connexion with the Courtavant sword (fig. 137) and another from the Danube (Case D). It thus partakes of the nature of the spear-head, rapier, and sword, and may be an experiment.

The small buckler from Athenry, co. Galway, has large bosses

in two zones in the style of pl. I, no. 1. At the back is the handle and one of the two loops (larger than usual) still attached to separate bosses that take their place in the inner zone. The diameter is 13 inches, like that from the *Isis* (p. 44).

Short swords and knives with flattened sockets to hold the handle are common in Ireland, and date from the latter Bronze Age (as in the *Dowris* hoard), but the type is also found in Britain. The specimen here illustrated (fig. 111) is a weapon with blade of  $9\frac{1}{2}$  in., the longest of the group.



FIG. 110.—Ring with transverse perforations, Ireland.  $\frac{2}{3}$



FIG. 111.—Socketed short-sword, Dungiven, co. Derry.  $\frac{1}{2}$

Hammers, too, are often socketed (as fig. 112), and two smaller examples (one like fig. 113) are included in a craftsman's hoard from *Lusmagh*, King's County, with chisels, anvil, spear-ferrule, gouge, and stone rubber for removing the seams after casting. A small group from *Crevilly* valley, Conner, Antrim, consisting of socketed celt and gouge, and a tanged chisel, was no doubt a personal hoard (p. 44.).

The remarkable series of bronzes exhibited from the townland of *Dowris*, King's County, formed part of a hoard found about the year 1825 in a part of *Whigsborough*, called *Derreens*. Though now boggy, the soil was at that time under cultivation, and was

no doubt covered with copse and underwood when the deposit was made, probably by a bronze-founder who worked on the spot. At least a horse load of these gold-coloured relics were found together, some pieces in excellent condition, others broken up to be remelted, though a few were damaged by the finders themselves. The rubbers of sandstone and the rough cake of metal point to the local manufacture of these articles, and most are of types commonly found in Ireland. The trumpets (pl. viii, nos. 4 and 8) are of three varieties, the curved specimens having the mouthpiece at the end or at one side, and the straight cylinders forming parts of larger instruments. The horns were



FIG. 112.—Socketed hammer, Ireland.



FIG. 113.—Socketed hammer, Dowris, King's co.

cast in one piece, the spikes being, perhaps, survivals of original rivet-heads. Of the so-called bells (pl. viii, no. 2), some are pear-shaped, while others are almost spherical, all containing loose clappers of metal or stone, but so constructed that little or no sound can be obtained from them. In useful association are three razors of ordinary form with round hole and notch (as fig. 46) and a short chape or bronze terminal for a sword-scabbard. Socketed knives and spear-heads are also included in the find, as well as a curious hammer-head (fig. 113); and many of the objects were contained in a bronze cauldron of 21 in. diameter, formed of thin plates riveted together, similar to that exhibited in the lower part of Case 14. It will be noticed that though the spear-heads are not



PLATE VIII. PART OF HOARD, DOWRIS, KING'S CO.

(Cases 54, 55, *see* pp. 106, 107)



of the latest type, all the swords have shoulders at the base of the blade (p. 32). The golden tint of many of the specimens may be due to the peaty nature of the soil, but very closely resembles the condition of some bronze implements found in the Thames. The composition of the metal varies, but all the pieces have a considerable proportion of tin, unlike the common flat celt of Ireland. One of the Dowris celts contains 85.23 per cent. of copper, 13.11 of tin, 1.14 of lead, and traces of sulphur and carbon, while the waste metal yielded on analysis 89 per cent. of copper, 11 of tin, and a mere trace of lead, iron, and silver.

Three bronze vessels belonging to the Dowris hoard are exhibited. The largest (pl. v, no. 2) is bucket-shaped, of a type rarely found in northern Europe, and evidently derived from Italy (p. 46). The two smaller vessels are less determinate, and have angular clamps to strengthen the base, similar to, but larger than, those on the largest vessel, which is much mended by patching, rivets and not solder being used for the purpose. All the bronze vessels of this period seem to have been of very thin metal, and were not well adapted for cooking purposes.

The trumpet was probably connected with warfare, and is especially common in Ireland, where two distinct kinds are found—those cast in one piece, and those formed of sheet-metal turned over and riveted to form the tube. In some the mouth-piece is at the end (pl. viii, no. 4), in others at the side (pl. viii, no. 8), like those made of elephant tusks in Central Africa. Those from the Dowris hoard already noticed (p. 106) illustrate the loops for hanging and the spikes near the mouth of the implement, while the straight lengths belonged to larger instruments, like one found at Caprington, Ayrshire. The Kelts of the second century B.C. are known to have used a large number of trumpets in war; but Irish examples of the type illustrated belong, like the *lurer* or twisted horns of Denmark, to the close of the Bronze period, though riveted examples may date from the Iron Age. In England trumpets have been found in the Witham at Tattershall, and at Battle, Sussex, the former having the edges united by soldering (a process unknown in the Bronze period), and closely resembling one found in Hanover.

There is no doubt that gold was known in some parts of Europe in the neolithic period, and it may possibly have been the first metal worked in this part of the world. It was obtained abundantly in four centres: (i) Macedonia, Thrace, and Thasos; (ii) Hungary and Transylvania; (iii) Spain; and (iv) Ireland, the mineral wealth of the Ural mountains not being accessible at that early date. Gold objects dating from the Bronze Age are generally of native metal (alloyed with silver) and are mostly ornamental though several ponderous axe-heads of the precious metal have been found in Transylvania. A peculiar interest

attaches to the crescent-shaped ornaments, sometimes called *lunulae* (fig. 97), which are undoubtedly of Irish origin. They were worn on the neck, and not as diadems on the head, and are of very rare occurrence on the Continent, examples from France (Dept. Manche, Côtes-du-Nord, and Vendée) and Denmark (Zealand and Fyen) showing intercourse with Ireland either by way of Britain or more probably direct by sea. Ships carved on the rocks of Sweden as well as at New Grange and Dowth, co. Meath, and Gavr'inis, Morbihan, would in themselves indicate extensive navigation; and agreement has been reached as to various objects of the early Bronze Age imported from these islands into Scandinavia. Irish gold may have been bartered for amber from Jutland, but amber was also found on our own east coast, and may have been sufficient for the local demand. Irish gold seems to have been in general use quite early in the Bronze Age, for the lunettes, of which over thirty are preserved at Dublin, show an early type of ornament (as fig. 97) and two specimens have been found in Cornwall with a bronze (or copper) celt of primitive form.

The greater part of the gold ornaments exhibited comes from Ireland, but very few pieces have any history, and the archaeological value of the series is thereby impaired. It is significant that many of the gold-finds in England have been in the southwest, while Wales, also within easy reach of Ireland, has also been productive. The metal was not confined to any one district in Ireland, but was found or traded all over the island, which has been regarded as the ancient world's El Dorado. According to M. Salomon Reinach, this industry of the Iberian population was ruined by a foreign invasion about 1000 B.C., and some Keltic-speaking barbarians (possibly the Goidels) arrested the development of Ireland till the advent of more invaders some time before 200 B.C., when the Late Keltic culture was introduced.

The hoard discovered at Newmarket-on-Fergus, co. Clare, in 1854, contained the largest number of associated gold ornaments of the Bronze Age ever brought to light in Ireland or western Europe; and has been fully described by Mr. E. C. R. Armstrong, who is in charge of the greater part at Dublin. Most of the types are represented here, the bulk of the hoard being bracelets with thickened ends, and the hoop of stout wire. The gorget (one of five) is of a type only known from this hoard, and only one is ornamented, with a few hatched triangles.

Bracelets are shown of a peculiar Irish type with hollow conical or cup-shaped terminals (fig. 114); and forms intermediate between these and the small 'dress-fasteners' show some connexion between them, though the exact use of many pieces is still obscure. A cup-shaped terminal is sometimes seen on bronze pins in Ireland (p. 103) and abroad, and something similar on the Cintra

collar (fig. 168), while the ends of dress-fasteners are flat and in different planes. The central rib, which alone was visible if Sir William Wilde's theory as to their use (fig. 115) is correct, is always striated longitudinally; and in some cases the bow of the



FIG. 114.—Gold armlet, Brahalish,  
Bantry, co. Cork.  $\frac{2}{3}$

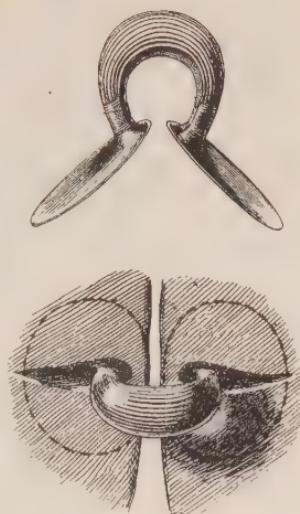


FIG. 115.—Gold clasp for the  
dress, Ireland.  $\frac{2}{3}$

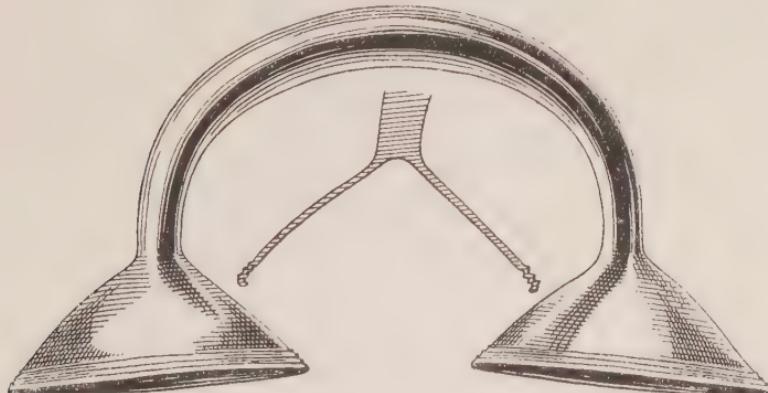


FIG. 116.—Gold hoop with conical ends, Ireland.  $\frac{3}{4}$

Scandinavian spectacle-brooch (fig. 140) has the same decoration and has a corresponding variation of size and shape.

An allied variety is represented consisting of a handle with two ends expanding into large hollow cones (fig. 116), and a late Bronze Age date may be inferred from the discovery of a bronze

example (like that shown from Tullamore, King's County) with socketed celts and cauldron handle near Poolewe, Ross-shire. These are generally called *fibulae* (brooches), but are sometimes ornamented just where the pin would work, and are more likely to be a form of currency, like the manillas of West Africa, which resemble fig. 114.

There is a large series from Ireland of small penannular pieces commonly known as 'ring-money', many of which present a surface of gold and silver in alternate rings, and a certain number have a core of base metal (copper or iron) concealed by a thin coating of gold (p. 53). No denominations giving a unit of weight have yet been determined.

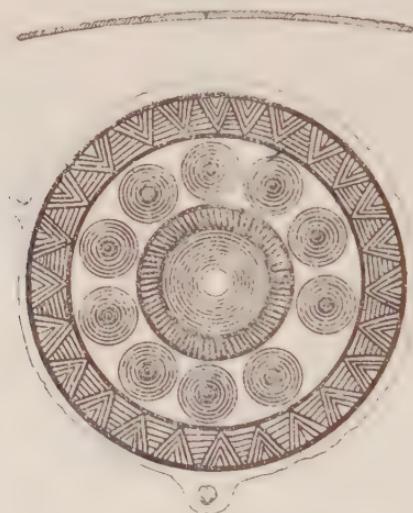


FIG. 117.—Bronze sun-disk, Ireland. 2

From Ireland come four gold disks and one of bronze, the significance of which had been verified by a discovery in Denmark. At Trundholm, in the north of Zealand, an engraved bronze disk, 6 in. in diameter, covered with gold foil, has been found mounted on a miniature carriage drawn by a horse. This was undoubtedly a ceremonial object, and connected with sun-worship, so that the discovery of more than one such disk (fig. 117) in Ireland shows the extent of the cult before the first millennium b.c., the Danish example being dated by Dr. Sophus Müller before the year 1000 b.c. Intentional damage had been done to the disk and car before deposit in the Trundholm moss, and they may be regarded as a votive offering. A damaged disk with gold covering has been found in Ireland; and that here illustrated has been broken across the centre. The ornament on those from Ireland is probably

later, and does not include the spiral (p. 135). The bronze disk has lugs on the margin exactly in the same position as in the Danish example, the lower one being for the purpose of fixing the disk to the axle of the carriage, the other for holding the horse's rein

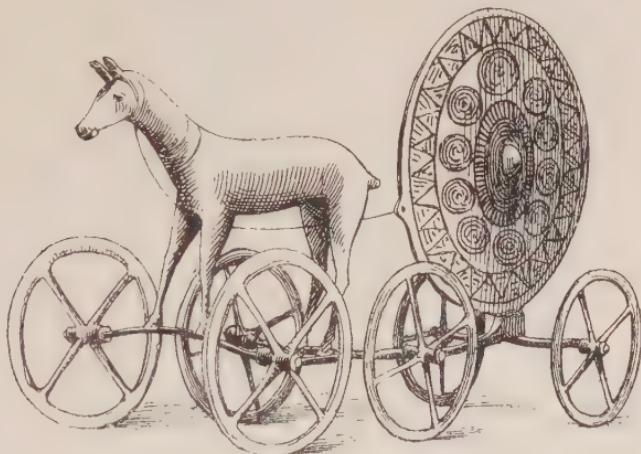


FIG. 118.—Sun-disk on specimen carriage.  $\frac{1}{2}$



FIG. 119.—Gold sun-disk,  
Ireland.  $\frac{2}{3}$

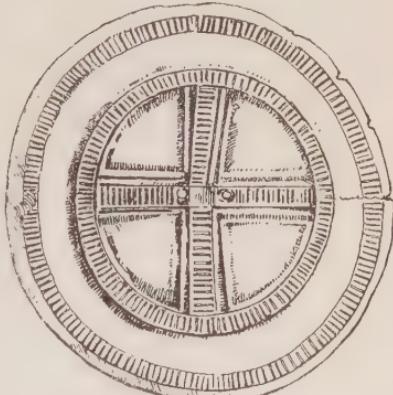


FIG. 120.—Gold disk with cross,  
Kilmuckridge, co. Wexford.  $\frac{2}{3}$

(fig. 118). It lacks, however, the gold plate, which was no doubt pressed into the pattern ; and the Irish gold disks (fig. 119) were probably fixed to a bronze foundation. The cruciform pattern on two of them (fig. 120) is a well-known solar symbol, and is often found on sepulchral pottery of the period (p. 70), while the three concentric rings of dots on the disk from Kirk Andrews, Isle of

Man, also occurs on the base of two incense-cups (Camerton, Som., and Beckhampton, Wilts.).

### CASTING, ANALYSIS, AND PATINATION

Many specimens that appear to be of the early Bronze Age have now been analysed both here and abroad, and some of the figures have been quoted. The existence of moulds in this country, together with an ample supply of the constituent metals, shows that bronze was from the first manufactured on the spot. It is, in fact, likely that foreign traders in metal were first attracted to Cornwall and other parts by the knowledge that bronze was already in use among the natives, who had discovered the ores and the secret of smelting and combining them. It was not only in the production of the best metal for their purposes (a mixture of nine parts of copper to one of tin) that the British native showed his skill, but also in the difficult task of hollow-casting by means of a core. The flat open moulds of stone (Dorset and Northumberland, below Case D; and Harbuck, co. Durham) were unsuited for casting anything but unalloyed copper, and it is conceivable that these were resorted to during any temporary scarcity of tin; but it is more probable that the open moulds represent, in this country and abroad, the earliest attempts at casting, which are far removed from the masterpieces produced at a later period. The existing moulds for swords, spear-heads, celts, &c., show that very little trimming was necessary after the operation of casting; but it must be remembered that the majority of moulds were no doubt of clay or compact sand, which have perished or been overlooked in excavations. The use of clay is well illustrated by a mould in this Case (fig. 121). It is of bronze, but was evidently cast in a mould of clay, which was formed round a model palstave and bound to it by twine reproduced in the metal.

A rectangular block with half-moulds for looped spear-heads and small pointed objects on the four faces, is illustrated (fig. 122); and the method of making the pin-holes by casting is clear from the cross-bar in some of the moulds, smaller notches being provided for wires to keep the core in position. The reproduction of a mould for a sword-hilt from Central Bavaria shows the method of hollow-casting. The core was in this case of bronze, but was generally of clay or sand, and in some instances remains of such cores may be seen in castings where the design or utility of the object is not thereby impaired.

The long ingots of copper were produced by running the molten metal into grooves cut in stone. Rude lumps of copper, like those from a founder's hoard at Grays Thurrock, Essex, are common, but tin is rarely included in these finds, and it is not present in

the rough lumps which are about 98½ per cent. copper, doubtless because the powdery ore is of a brown colour and not easily

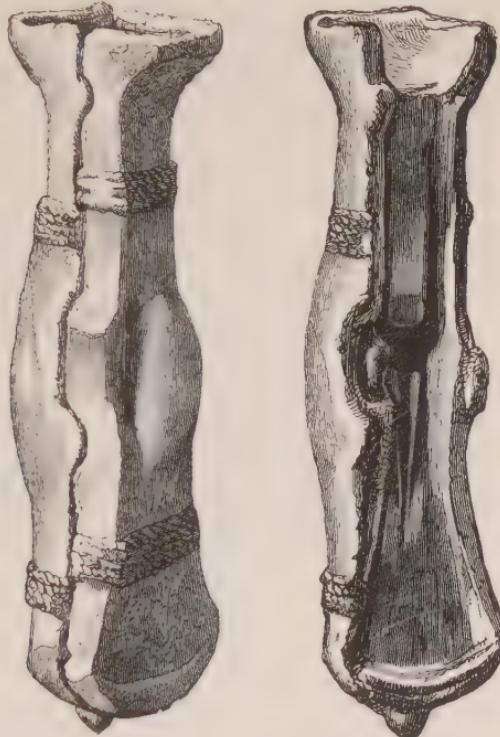


FIG. 121.—Bronze mould for palstaves, Wilts.  $\frac{1}{2}$

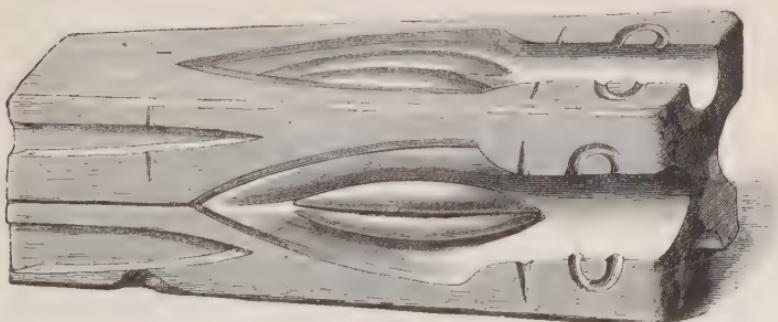


FIG. 122.—Stone mould for spear-heads, Lough Gur, co. Limerick.  $\frac{1}{2}$

distinguishable in the ground. The two round cakes of bronze were perhaps used as anvils on which to beat out and harden the cutting-edges of implements by means of hammers.

The leaden socketed celt from Seamer Moor was no doubt used as a model for the production of clay moulds: and the bronze mould from the Southall hoard here shown contained when found the remains of a similar leaden celt.

Analysis of various Bronze Age specimens are given elsewhere and here may be added a series of early date, apparently in order of evolution (fig. 3, *a*, *b*, *c*). There is a progressive increase in the amount of tin added to the copper, and other constituents are here omitted. Out of the 100 parts:

		Copper.	Tin.
Short broad celt, St. Margaret's	.	97.98	0.04
Long broad celt, Durham	.	98.67	0.05
Thick narrow celt, Yaxley Fen	.	89.72	8.99
Thin narrow celt, Cambs.	.	87.41	11.04
Flanged celt, barrow, Plumpton Plain		86.79	11.34

The tin in the first two specimens may be due to impurities in the ore, but it seems clear that the most suitable proportions were found before the flat celt passed out of fashion.

*Patina* is a Latin term (meaning dish or pan, and related to *patera*) used in modern times for the fine green crust of verdigris that often gives a lustrous surface to ancient bronzes. Between this crust of copper carbonate and the metal, there is often a layer of cuprous oxide, which is probably the first product of the action of the atmosphere and moisture upon the copper of the bronze. The cuprous oxide takes up more oxygen and then carbonic acid and moisture, forming blue and green basic carbonates of copper. The golden colour of many ancient bronzes found in Britain represents the original surface, which remains unchanged owing to the protecting quality of peat; a black coating easily removable is often found on such specimens. Good examples of dark and light green *patina* respectively are the spear-heads from Brigmerston Down and Fenny Bentley, in Case O; and the gold colour is well preserved in the Dowris hoard (Cases 54, 55).

#### LAKE-DWELLINGS IN THE BRITISH ISLES.

The greater number of these habitations must be ascribed to the Iron Age, and as such do not come within the scope of the present Guide; but stone and bronze antiquities which have been found in several of them suggest that these at least were occupied at an earlier period. On any other supposition these objects must either have been accidentally dropped into the water over these precise spots, before the dwellings were constructed, or else deposited at a time when iron was already in use. It is in the highest degree improbable that the presence of these

weapons and implements can be due to chance, while the supposition that they were still in use in the Iron Age is equally unsatisfactory. For although at a time of transition the old material may persist by the side of the new, implements of *two* earlier periods would hardly survive into a third, as would be the case, for example, if the lake-dwellings at Holderness in Yorkshire were ascribed to the Iron Age, as here both stone and bronze implements have been discovered. Stone moulds for casting bronze spear-heads are known from crannogs in Lough Gur (fig. 122), co. Limerick, and Lough Seur, co. Leitrim; and bronze celts and daggers, for instance, from Lake Monalty and Lough-na-Glack in co. Monaghan.

Although these facts point to an occupation of these sites in the neolithic and Bronze Ages, it is undoubted that the British lake-dwellings as a class are connected with the Iron Age, since the majority of the antiquities yielded by exploration belong to that period. The Irish and Scottish crannogs continued in



FIG. 123.—Dug-out canoe, South Stoke, Sussex.

occupation right through the Middle Ages. Historical records make mention of them; and the crannog of Lough Lane, Roscommon, was taken by assault by Sir R. Bingham in the reign of Queen Elizabeth. In view of these facts the description of British lake-dwellings here given will be confined within the narrowest possible limits.

A crannog (derived from *crann*, a tree) is an artificial island usually made of logs laid transversely, with the addition of brushwood, stones, and earth, and surrounded by one or more stockades, the piles of which were held together by branches of trees or even by mortised beams. It was often surmounted by a platform of timbers on which the hearthstone was placed and the wattle-and-daub huts erected, and was generally oval or circular with a diameter of at least 60 or 70 ft. There was a gangway of some kind connecting it with the shore, but the occupants were invariably supplied with dug-out canoes, of which numerous examples have been found (as fig. 123). The above method of construction seems to have been most frequently adopted where the bottom of the lake was soft and yielding; in the rarer cases when it was hard and rocky the artificial island was formed by piling up stones until the surface of the water

was reached. Crannogs are most numerous in Ireland and Scotland, those in the counties of Ayr, Dumfries, and Wigtown having proved archaeologically the most valuable, but they are also known in England and Wales. The most striking English examples are perhaps those excavated by Mr. Thomas Boynton in 1880, at Holderness in Yorkshire (Case 5), where, as has been already stated, both stone and bronze implements were found.

The lake-dwellings of these islands were not, however, confined to the crannog type. At Barton Mere, near Bury St. Edmunds, the huts had been built on piles, after the Central European manner, and here socketed bronze spear-heads occurred. Other pile-dwellings have been explored at Newbury in Berks., Southwark and London Wall in the Metropolis, and at Glastonbury, but these are chiefly of too late a date for treatment in a Guide confined to the Bronze Age.

#### DUG-OUT CANOES IN PORTICO.

Under the portico, on the east, outside the Hall door, are three 'dug-out' canoes which probably date from the Bronze period. They belong to a common type, formed out of a tree-trunk split lengthwise, the work of excavating the interior being performed by tools of stone or bronze, and possibly by fire. The largest of the three (fig. 123) was found in 1834 in a drain which probably represents an ancient course of the Arun between North and South Stoke, the exact site being about 150 yards from the present stream. It is about 35 ft. long, nearly 2 ft. deep,  $4\frac{1}{2}$  ft. wide in the middle, and  $4\frac{1}{2}$  in. thick at the bottom. Three bars across the bottom inside gave additional strength, and also served as a foothold for the crew, but the mode of propulsion is uncertain. Another was found during excavations for the Royal Albert Dock at North Woolwich, 1878. The oak trunk was carefully worked, the bottom and sides being flat and rectangular; but there are no signs of keel, stretchers, or rowlocks. Both ends were alike, straight and somewhat raised, and the length was 17 ft. with a beam of about 2 ft. It was found on the bank of a stream which had cut its way through a bed of peat. The third is also of oak, nearly 15 ft. in length, and 2 ft. 4 in. wide: the ends both rounded, and the sides almost at right angles to the flat bottom. On the right (starboard) side of the stern a hole had been drilled vertically through the gunwale for a peg, but the corresponding part of the left gunwale is wanting. A pole, perhaps used for punting, was lying under the boat, which was itself 6 feet from the surface on an ancient bank of the Lea at Walthamstow.

Though 'dug-out' canoes are frequently found, and are still in use in many parts of the world, no metal objects are known to have been found in association with any excavated in our islands.

In Erith marshes and in more than one case on the Clyde, stone celts have been found within them, and their position on a raised beach about 25 ft. above the present sea-level in Scotland may be significant; but perhaps another explanation can be found, that does not necessitate a geological date.

#### CONTINENTAL LAKE-DWELLINGS: Case F.

The lake-dwellings of Europe are best represented on Swiss sites; but though Switzerland is more especially associated with this kind of habitation, it is by no means unique in this respect. When remains of a like character are found not only all round the Alps but also across northern Europe; when Herodotus records the existence of similar settlements in Thrace, and Hippocrates of others on the river Phasis; when in various parts of Asia, Africa, and America people are still found dwelling in the same manner, it may be inferred with certainty that the custom of building houses on piles did not result from local or accidental circumstances, but from the universal need for security in unsettled times. A village in a marsh or lake, and connected with firm ground by a very narrow gangway, was as impregnable as a hill fortress, and certainly more convenient, as it might be extended over a larger area and could never run short of water. So great were these advantages that the obvious drawbacks of such a mode of life counted as nothing in comparison.

The earliest pile-settlements go back to neolithic times, and have been mentioned in the *Stone Age Guide*, where illustrations of modern pile-dwellings in New Guinea will also be found. But in Switzerland the same sites were in continuous occupation throughout, and even after, the Bronze Age; and the occurrence in the same relic-beds of objects dating from consecutive periods and illustrating a gradual cultural development, affords one of the strongest proofs that the civilization based upon the use of bronze did not come in with fire and sword, but rather through gradual immigration and the growth of primitive commerce.

Switzerland and Italy naturally receive more detailed treatment, but we may pass in rapid review the other countries in which lake-dwellings were erected in ancient times. In Savoy, the Lakes of Bourget and Annecy have yielded remains chiefly of the Bronze Age. In Bavaria there are several well-known sites: the Lake of Starnberg (Wurmsee), the Mondsee, Attersee, and Fuschlsee have settlements of both the Stone and Bronze Ages; the Neusiedlersee remains of the Stone Age only. In Carinthia there is a neolithic site on the Keutschachersee near Klagenfurt; while in the Laibacher Moor in Carniola, a large peat-bog now drained, were settlements of both ages, yielding objects which prove Aegean influence, among others conventional human figures of earthen-

ware, probably idols, and fine pottery with incised ornament apparently once filled with chalk in a style known both in Cyprus and at Hissarlik (p. 165). In Hungary have been discovered various terremare (p. 142), of very great interest in view of their probable connexion with the Italian sites, the most important being that at Lapos Halom near Toszeg, not far from Szolnok on the right bank of the Theiss, where both Bronze and Stone Age antiquities have been found. Holland has its *terpen*, which in many respects resemble the terremare, and, like them, have been exploited for agricultural purposes. They are mentioned by Pliny as habitations surrounded by water at high tide; and the antiquities discovered prove an occupation both in Roman and later times. But as stone implements have also come to light, it seems probable that some of the *terpen* were constructed long before the Romans reached the North Sea.

In addition to the above, there is a whole series of lake-dwellings distributed along Northern Europe from East Prussia to the British Islands, some being regular pile-structures, others the artificial islands strengthened by piles which in Scotland and Ireland are called crannogs. Various eminent authorities have held the opinion that these northern settlements belong to the Iron Age on account of the numerous objects of late date which their relic-beds contain. It is beyond dispute that many of them were occupied down to mediaeval times, and some have yielded no antiquities earlier than the Iron Age. But in others, as for example near Wismar and Bützow in Mecklenburg, in Posen, and East Prussia, stone implements have occurred, the types in some cases being Scandinavian, while occasionally stone and bronze objects have been found together, this confusion of objects belonging to various periods being also characteristic of some Irish and Scottish crannogs. The comparatively frequent occurrence of earlier remains makes it difficult to deny a corresponding antiquity to the sites on which they are found, for it hardly seems possible to ascribe their presence in so many instances to chance alone.

In Switzerland itself pile-villages have been found in almost every lake, the small and shallow sheets of water being in many respects the best adapted not only to their erection but also to the preservation of their remains. Since the abandonment of the settlements many of the smaller lakes have been entirely overgrown by peat, so that the pile-dwellings which once stood in water have remained undisturbed in bogs or moors beneath several feet of peat-moss, a fact to which we owe much of our knowledge with regard to their constitution and arrangements. In the large lakes only shelving shores were regarded as suitable sites, but even these must have been considerably exposed to wind and rough weather. Most of the settlements were built upon actual

piles, but this was not universal, for heaps of stones kept in place by piles were often raised in the lakes, and sometimes, as at Niederwyl in Lake Pfäffikon, the houses were supported by structures of fascines. Many kinds of timber were used, such as oak, beech, elm, birch, ash, fir, elder, maple, poplar, and willow, and the piles were sometimes merely trimmed poles, sometimes split timbers: the latter are considered characteristic of the Bronze Age, when the use of metal axes made the carpenter's work easier and more rapid. On the tops of the piles, which were set very close together, wooden platforms were fixed, and on these stood the houses, light structures of wattle covered with clay and thatched with straw, each having as a rule its own hearthstone, and a stone for grinding meal. The settlements often extended several hundred yards along the shore, with which they were connected by means of a gangway; but canoes were also in general use, several of the dug-out variety (as fig. 123) having been discovered in various sites.

It has frequently been found that where a particular site has been occupied during the Stone and Bronze periods, the later settlement is further out in the water than the earlier; examples of this occur at Mörigen and Gerlafingen in the Lake of Biel, and at Auvernier, Cortaillod, Bevaix, and Estavayer in the Lake of Neuchâtel. The antiquities are found in a blackish stratum of organic *débris* at the base of the piles; and the charred condition of many of them, as well as of the piles themselves, shows that the majority of the lake-villages were at one time or another destroyed by fire. It is not necessary to suppose that these conflagrations were other than accidental, for all that rose above the level of the water was of an extremely inflammable nature, and the flames, when once fairly kindled, could hardly have been extinguished by the primitive appliances which the inhabitants had at their command.

Many of the Swiss lakes must have been simply fringed with pile-villages, for even now the settlements known to archaeologists are thickly dotted round their shores: thus, Lake Neuchâtel has more than thirty, while some fifty are scattered round the Lake of Constance. In the majority of cases both stone and bronze antiquities are found, but some settlements, like that at Schachen on Lake Constance, belong almost exclusively to the Bronze Age. In others, as at Vinelz in the Lake of Biel, and St. Blaise in the Lake of Neuchâtel, a period of transition from stone to metal is clearly marked; the metal axes are of early types, while some daggers from St. Blaise closely resemble the usual flint forms. The fact that the majority of these early metal objects are of copper has its bearing on the discussion as to the existence of a Copper stage of culture preceding that of Bronze (p. 5). It is impossible to enumerate the various stations remarkable for

the bronze objects which they have yielded; but special mention may be made of the pile city at Morges on the Lake of Geneva, where the Bronze Age settlement was some  $1,200 \times 150$  ft. in extent, and yielded antiquities important alike for their number and high artistic quality.

The principal bronze objects discovered in the lake-dwellings are celts (the 'winged' type like fig. 124 predominating, but the flat, flanged and socketed types are all present); dagger-blades with rivets for attachment to perishable hilts now lost; knives with curved blades (fig. 125), frequently ornamented, and either

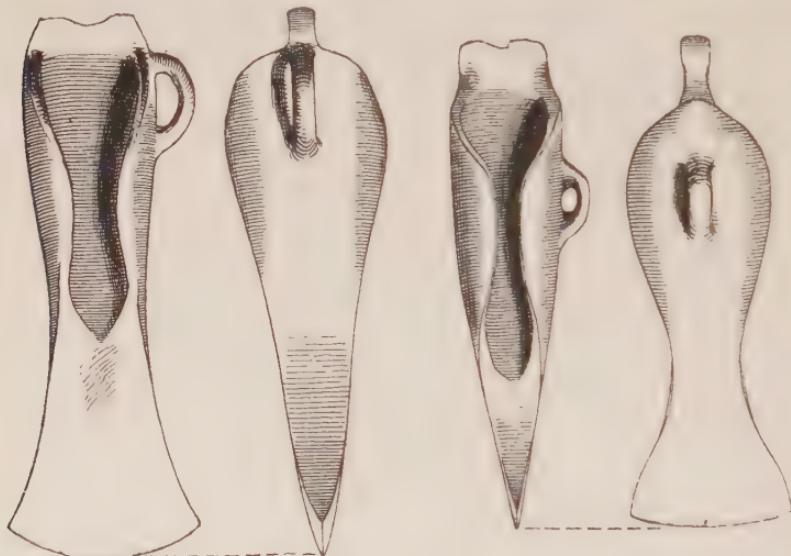


FIG. 124.—Winged celts, Swiss lake-dwellings. 1

with tangs, sockets, or solid handles cast in one piece; swords with flat handles, pierced for rivets, or complete with hilts cast in the round, a few of the latter from Lake Luissel, Canton de Vaud, terminating in 'antennae' (cf. fig. 143) which persisted into the early Iron Age; razors of peculiar form (fig. 126); sickles (like fig. 47, Taplow); chisels (fig. 127); gouges; socketed hammers; saws; fish-hooks (fig. 128); horse-bits; vessels and dishes; rivets and nails; tweezers and needles; armlets and bracelets (solid and hollow); finger rings; pendants; buttons; long hair-pins (very common); and brooches of various safety-pin types (rare). Gold is rarely met with, and then only in the form of small objects such as beads, earrings, and finger-rings; but tin occurs in the form of ingots as well as of ornaments, and fine earthenware vessels were decorated with strips of it.

Of stone objects which continued to be used in this period may be mentioned: hearthstones; sharpening-stones; mealing-stones for grinding grain; arrow-heads; finely-made pierced axe-hammers; moulds for making implements; pierced sinkers and discoidal stones, said to have been used by potters for finishing the bases of vessels. Doubtless flakes and scrapers, and even

flint knives and saws, were also used, though more and more rarely as time went on.

Deer-antler and bone were in less demand for tools than during the Stone Age, but were still employed for various purposes, such as making the side-pieces of horse-bits, for fish-spears, and barbed harpoon-heads. All kinds of things were made of wood, from dug-out canoes, oars, house-doors, boxes, and yew bows, to dishes, ladles, and combs.

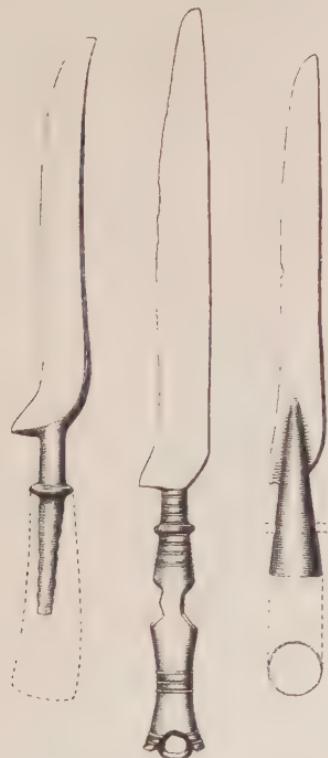


FIG. 125.—Knives, Swiss lake-dwellings.  $\frac{1}{3}$

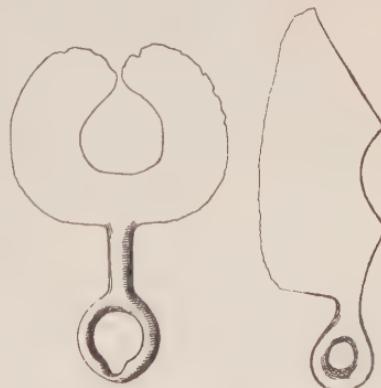


FIG. 126.—Razors, Swiss lake-dwellings.  $\frac{1}{2}$

Pottery was of two sorts: a rougher kind containing sand and grit, and a ware of finer composition, sometimes of a dark grey colour, or blackened with graphite or charcoal. Pottery of this latter class was, even in the neolithic period, ornamented with deeply incised designs inlaid with a white chalky substance, a circumstance which, like the occurrence of the small idols at Laibach, suggests a cultural connexion with the Eastern Mediterranean. The ornament is geometrical, consisting of impressed or incised circles, semicircles, triangles, dots, zigzags and herring-

bone bands. A rare method of decoration by means of applied strips of tin was practised at the settlements of Cortaillod, Corcellettes, and Estavayer, on the Lake of Neuchâtel, as well as in the lakes of Savoy (fig. 129). The forms include jugs, bowls, dishes, vases, plates, and beakers. Some of the vessels are pointed at the base, and cannot stand upright unless supported by clay rings, of which numerous examples have been found. Other objects of earthenware are crucibles, clay spindle-whorls, and loom-weights. Textiles are represented by flax-cloth, yarn, thread, and netting. The inhabitants of the lake-dwellings were ac-

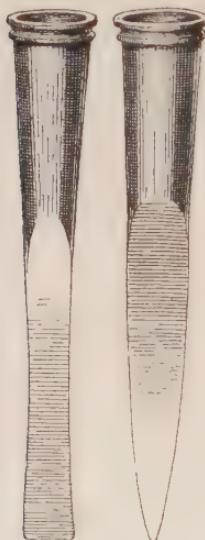


FIG. 127.—Socketed chisel,  
Swiss lake-dwelling.  $\frac{1}{2}$



FIG. 128.—Fish-hooks, Swiss lake-  
dwellings.  $\frac{2}{3}$

quainted with numerous animals, many of which were domesticated. The following list will give some idea of the variety of animal remains discovered: *wild animals*—bison, aurochs or urus, elk, stag, roe-deer, great bear, wild boar, fox, wild-cat, marten, pole-cat, beaver, otter, badger, hare, squirrel, field-mouse: *domesticated animals*—horse, cow, sheep, goat, and dog. Among birds may be mentioned the stork, heron, sea-gull, wild-duck, and teal; and among fish and reptiles, the tortoise, frog, toad, carp, pike, and salmon. Vegetable remains include wheat and barley (often found in carbonized masses), flax, raspberries, blackberries, strawberries, apples, sloes, hazel and beech nuts.

From the nature of the above remains it is possible to construct a picture of the kind of life led by the people of the pile-

dwellings. They were still hunters and fishermen, but their flocks and herds and their fields of corn provided them with food obtained without exertion or danger. They rode horses and drove wagons or chariots, as is proved by the discovery of numerous bits and several wooden wheels; this point is of interest because these bits and wheels are the first certain evidence of the domestication of the horse. The crucibles, moulds, ingots and pieces of slag and scoriae, show that they had a knowledge of metallurgy, and made their implements and weapons themselves. The spindle-whorls, loom-weights, and pieces of cloth, often very finely made, are sufficient evidence that they were skilful weavers. Though they were such capable potters, there is no evidence that they knew of the potter's wheel. Their



FIG. 129.—Vase with applied tin, Conjux, Lake of Bourget.  $\frac{1}{2}$

artistic faculty was not highly developed, and, unlike the ancient cave-dwellers of Southern France who were able to reproduce animal forms with vigour and accuracy, they did not advance beyond geometrical designs of a simple description. That they had, like all peoples in their stage of culture, a love of personal adornment we know from the large numbers of beads, rings, armlets, pendants, &c., which the investigation of their settlements has disclosed (see examples from Lake of Bourget in Savoy). They had various weapons for close quarters, and used javelins and yew bows for attacking at a distance. The character of various remains discovered on the sites of their settlements indicates that they had some kind of religious cult. Among these 'ceremonial' objects may be cited some bronze tubes with appended rings (p. 128), which can hardly have a practical use, and recall the *sistra* or rattles of a somewhat similar kind shaken during religious ceremonies in Japan. Rings found at Morges,

Thonon, resembling armlets, but incurved at the back and inconvenient to wear, may, it is thought, have served the same purpose as the *armilla sacra* which the ancient Germans held in the hand when taking a solemn oath. Then there are clay figures of animals, the little earthenware 'idols', and certain horned objects of pottery or wood which have been regarded as head-rests, but are more likely horns of consecration ('horns of the altar') and connected with a primitive form of cult, like that of Minoan Crete.

The mention of these objects leads by a natural transition to the question of intercourse between Central Europe and the outer world. As might be expected, the method of ornamenting pottery by inlaying incised designs with chalk is found at Hissarlik and in Cyprus in prehistoric times; the amber beads have been proved to come from Italy (not the Baltic), but brooches and other objects, both of Scandinavian and North Italian affinities, show that the countries to north and south exerted some influence on the intervening territory. The quantity of jade implements discovered in the Swiss lakes is held by some to prove that even in the Stone Age communication must have existed with the East.

Human remains have been found in many of the lake sites, though complete skeletons are rare, and have evidently not been intentionally placed in the positions in which they were found. For a long time the manner in which the dead were disposed of remained a problem to the explorers of the pile-settlements: but light was thrown upon this point by the discovery in 1876, on the mainland opposite the settlement of Auvernier, of a tomb or vault surrounded and covered by large slabs of stone and containing the remains of about 120 bodies, the skulls of which were identical in character with those actually found under water among the piles. The chamber formed by these flags was 5 ft. 3 in.  $\times$  3 ft. 8 in. and 5 ft. 10 in. deep, and the bodies were probably placed in a sitting position round the sides: the implements found were of both stone and bronze, so that the interment may be ascribed to the transition period. Later discoveries include cist-interments at Morges; and at St. Prex a cemetery, in which the skeletons had been simply placed in the earth, with ornaments belonging to the most highly developed period of Bronze Age art. Amongst these free burials were cinerary urns which resembled the lake-dwelling pottery of the Bronze Age, containing bones and charcoal, and showing that inhumation and incineration were practised concurrently.

Craniological investigations are held to prove that the lake-dwellers originally belonged to the short-headed Alpine race which is still so clearly represented among the Swiss population, but that there was a gradual increase of long-headed people who already predominated during the later Bronze Age. Professor

Virchow was of opinion that the new elements were introduced by slow degrees, and his contentions are supported by remains of dwellings and implements which show no traces of sudden or fundamental modifications until the beginning of the Iron Age. The greater part of the metal objects in Case F (east side) were obtained from the Lakes of Neuchâtel and Bièvre in Switzerland, and from the Lake of Bourget in Savoy. A full account of the pile-settlements will be found in Dr. Robert Munro's book *The Lake-Dwellings of Europe*.

#### FRANCE : Cases E, and 1, 2.

There is no doubt that in the Bronze period there was a close connexion between the civilization of France and these islands ; and though it is only in Brittany and the Paris basin that close analogies may be looked for, it must be remembered that the Rhône, which belongs rather to the Swiss and Italian areas of culture, was on the highway of early trade between the Mediterranean countries and north-west Europe. It is therefore not surprising to find a mixture of types in the series of arrow-heads from Drôme, Vaucluse, and the Rhône valley, whereas the ordinary French pattern is flat and barbed, with a tang sometimes as long as the head.

Without insisting on the simultaneous development of culture in the two countries, we may give the dates assigned by Prof. Montelius as interesting in connexion with our own antiquities. The first period, or age of copper, is said to have started some time before 2000 B. C. ; and is characterized by pottery, heads, &c., surviving from neolithic times ; by daggers of Cypriote type (fig. 178), double-axes recalling stone forms, flat celts, and halbert-blades. The second period (1850-1550) is marked by bronze with about 10 per cent. of tin, in the form of flanged and spoon-shaped celts (fig. 130), rapiers with rounded base, daggers of triangular shape, simple pins and bracelets with tapering ends. During the transition to the third period appear the socketed spear-head and the celt with stop-ridge ; and during that period (1550-1300) cremation is introduced, also tweezers having broad blades, rapiers with two rivet holes and angular base (as Chinon, Indre-et-Loire), bracelets with blunt ends, elaborate pins, the palstave, and the peculiar flanged celt of Italy (fig. 156, Abruzzi). The fourth period (1300-1050) brings celts with wings in the middle and socketed celts, swords with broad tang, chapes sometimes of the British tapering type, broad and heavy bracelets, razors, and Italian brooches. The fifth period (1050-850) has celts with wings near the butt (fig. 3, no. 2), and socketed examples, of a type common in Britain (fig. 3, no. 3) :

swords (in the Rhone valley) of a peculiar type occurring in Central Europe (fig. 131), called after Mörigen, and others with *antennae* (cf. fig. 143) known as the Ronzano type; socketed knives, both straight and curved, leaf-shaped swords as in Britain, bracelets with returned ends, trumpet-shaped mounts (as pl. III), and convex disks (like one from the Thames) with loop or shank behind the central boss. The short chape from eastern France belongs to this time, and wire bracelets also occur like those from



FIG. 130.—Spoon-shaped celt, Aps, Dépt. Ardèche, France.  $\frac{1}{2}$



FIG. 131.—Sword, probably from S. France.  $\frac{1}{8}$

Heneglwys (Case F) and Heatherly Burn (p. 47). About the middle of the ninth century the use of iron was learnt from the people of Upper Austria, who were known to classical historians as Kelts. Cremation in the later stages was apparently more uniform on this side of the Channel, as the older rite still continued to be practised in Gaul after the innovation which, according to this chronology, dates from the fourteenth century B.C.

Among the celts should be noticed specimens of types which are confined to certain areas in France and neighbouring countries. The spatula or spoon-shaped celt (fig. 130) is found in the Rhone

valley as well as in the Swiss lake-dwellings (Case F) and the terremare of North Italy—another indication that the earliest bronze objects were imported into France across the passes of the Alps or along the Ligurian coast to the neighbourhood of Marseilles. The long-socketed celt with a square section at the mouth is practically confined to north-western France, and may be called the Brittany type (fig. 132) of which a lead specimen is exhibited from Morbihan. There seems to have been a regular export of such celts to the southern coasts of Britain, specimens having been found in Cornwall, Portland, Isle of Wight, New Forest, Berks., Wilts., and Sussex.

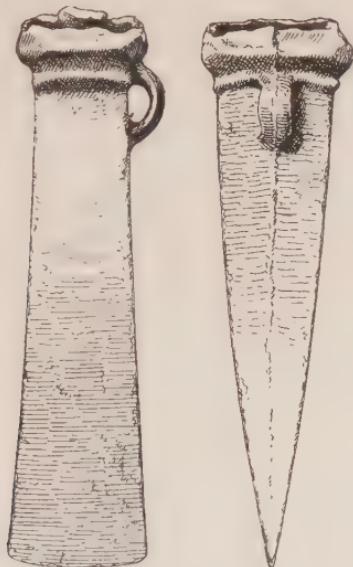


FIG. 132.—Socketed celt, Ergué-Armel, Quimper, Brittany.  $\frac{1}{2}$

That the traffic was not all in one direction is, however, shown by Déchelette's map of the bronze hoards found in France, the large majority being near the Channel coast, and near Brest and the mouth of the Gironde on the Atlantic coast, the inference being that much of the metal came from the British Isles.

Another type here represented is the winged celt, which is indeed known in England, but was probably imported in the first instance from France or Germany. It occurs, for example, in the Beachy Head deposit (pl. iv), and forms a link in the chain of development from the flat celt to the socketed variety in this country (p. 26). The notch or opening to be observed in the butt of this and certain other types from France and Italy (p. 148) was

due originally to the presence of two projections or jets formed in the runners of the mould (see pair found near Amiens), and not removed after casting, but hammered over to form a loop. It is difficult to see how this could have been of any service, as the butt was entirely covered by the prongs of the handle (cf. fig. 4). Diminutive socketed celts, the use of which is not apparent, are also exhibited.



FIG. 133.—Anvil, from the Rhone district, France.  $\frac{2}{3}$



FIG. 134.—Socketed celt, Avignon, Dépt. Vaucluse, France.  $\frac{1}{2}$

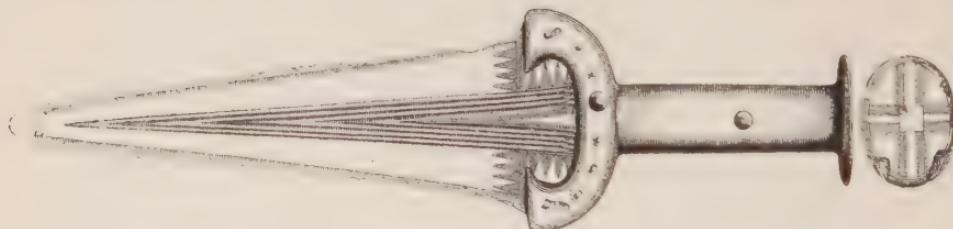


FIG. 135.—Dagger, La Guillotière, Dépt. Rhône, France.  $\frac{1}{3}$

Other objects of interest are the small anvil (fig. 133), the cylinder with a number of movable rings already referred to (p. 123), and the socketed celt resembling that from Beverley (fig. 53) but with the loop on the face instead of the side (fig. 134). The larger armlet with spiral coils is more common in Central Europe, and the dagger from La Guillotière (fig. 135) is of the terramara type seen in Case C. A hollow terminal in the form of a bird from Auvergne resembles one from Hungary (Case D), and, to judge from an analogous example found in Denmark with

remains of wood, was probably attached to the end of a chariot-pole. The gigantic dagger 26 $\frac{3}{4}$  in. long from Beaune, Burgundy, must be regarded as a ceremonial weapon, and though unusual is not unique, as another has been found at Plougrescant, Côtes-du-Nord. It is on the same lines as the broad blade from Kimberley, Norfolk (Case P), which is exactly half its length; and it should be noticed that neither has any rivet-holes for attaching a handle. A rapier with the same spade-shaped butt and two rivets is exhibited from Chinon, Indre-et-Loire.

The Bronze Age section of the Morel collection (1901) is exhibited in Case E and in the adjoining wall-cases 1, 2, all coming either from the Champagne or the lower Rhône valley. A spear-head with angular socket and pierced blade (fig. 136) is worthy of notice, as slits and circular holes on either side of the rib are more

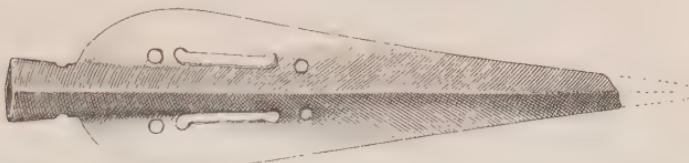


FIG. 136.—Spear-head with pierced blade, France.  $\frac{1}{3}$

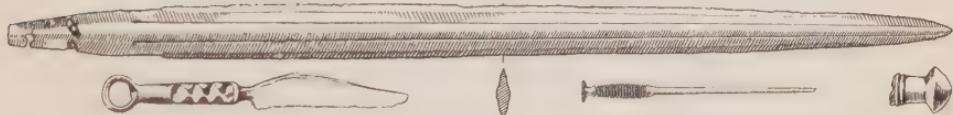


FIG. 137.—Sword and chape, knife and pin, Courtavant, Dépt. Aube.  $\frac{1}{6}$

often found in Britain. On the whole, French spear-heads show a marked resemblance to our own, and it is probable that the few found with loops on the socket or at the base of the blade were imported from Britain.

The sword from a burial at Courtavant, Aube, is not only a rare form, but important on account of its association with a chape, knife, pin, and other objects (fig. 137). It may be compared with one from the Danube in Hungary in Case D, and seems to mark the transition from the rapier to the leaf-shaped sword. Three rivets are still in position, and their arrangement is approximately that of fig. 11 (4). The chape of the scabbard is also much earlier than the winged type (fig. 13) as from Ste. Cécile, Vaucluse, and the exaggerated form seen with a sword from Jonquières, Vaucluse, both these belonging to the Hallstatt (Early Iron) period. It should be mentioned that the Courtavant blade has rudimentary shoulders, and between them and the handle the two edges are

serrated, as in the Hungarian Series (Case D.). The line between grip and scabbard (cocked-hat form) can still be traced on the blade.

This burial was selected by the late Capt. Déchelette as typical of the third stage (1600-1300 B.C.) of the Bronze Age in France, his fourfold division being based on that of Prof. Montelius given above. The body was lying at full length in a large grave thickly lined with stones, the sword in its wooden scabbard being between the legs, and the pin on the right collar-bone. Cremation was commonly practised in the succeeding fourth stage, as in Britain.

There are other long pins in Case E. one from Beaune, Côte-d'Or, 25½ in. long, having angular bronze beads (as fig. 154) strung below the head and suggesting an origin for the sharp mouldings in that position on other specimens.

French pottery of this period is comparatively scarce, and has been divided into three groups. The first is distinguished by the addition of handles, some of the vessels resembling the Cornish type of cinerary urn (Cases 12, 13), but the model came probably from the south to Armorica, where these vessels accompany cremations of the Early Bronze Age, but do not contain the ashes. Another type consists mainly of jugs and handled bowls deeply incised in rows of triangles, circles, lattice, and other geometrical patterns: they are found chiefly in the east of France, often with long bronze pins, and date from the middle of the Bronze Age. A third group is ornamented with bands of vertical or sloping grooves or with bosses, the latter certainly derived from the Lusatian (Lausitz) type (Cases 31-34) and generally found in Alsace. Still later are several types from Lake of Bourget, which may be matched in the Swiss lake-dwelling (Case F). They often accompany cremated burials of the latest Bronze Age.

#### DENMARK: Cases H, 36

Situated at one extremity of the Old World, the Scandinavian countries present certain peculiarities in the neolithic and Bronze Ages which are due to their remoteness from the centres of early civilization. They received their culture at a comparatively late date, and in their isolation brought the arts of working stone and bronze to a high degree of perfection, while more advanced nations had already entered the succeeding stage. It must, however, be borne in mind that throughout the Bronze Age the amber trade brought merchants, or at least manufactured goods, from the Mediterranean, and fine bronzes evidently of Italian origin are not uncommon in Denmark and South Sweden. It is this proof

of early intercourse that has prompted Prof. Montelius, of Stockholm, to regard the Scandinavian Bronze Age as dating from the early time when such objects were being produced in Italy, and thus to give it a duration of about thirteen centuries. Another view is taken by Dr. Sophus Müller, of Copenhagen, who does not allow such a rapid transmission of culture in those early times, and places the beginning of the Bronze Age in Scandinavia soon after 1500 B.C., the whole being divided into nine periods of a century each, and the division between the early and late periods dating about 800 B.C. Prof. Montelius' classification is more detailed, and as it is often referred to, may be summarized here. His first period includes the copper implements of rude type which are generally regarded as the earliest metal objects in Europe: while his next four periods extend from the fifteenth century B.C. to the eighth. The Hallstatt period of Central Europe is represented in Scandinavia by his sixth (about 750-600 B.C.).

The extreme scarcity of pure tin and copper in the Scandinavian finds of the Bronze Age suggests that bronze was at that time imported; and as analysis shows, some came from Central Europe and some from the British Isles, the latter supply being remarkably free from nickel, an alloy which is characteristic of the German ores. Apart from the obvious Italian productions, the manufacture of bronze implements and ornaments was local, and many hoards in Scandinavia, as in England, show moulds, jets, and broken articles ready for remelting. The art of casting bronze was practised with great success in this part of Europe, and the *cire perdue* process was adopted for bowls, ceremonial axes, and other elaborate productions. There still exist in Sweden and Norway, especially in Bohuslän, Östgotland, and Scania, a large number of rock-carvings dating from this period, which show that the soil was cultivated, that the horse was used for riding and driving, that large ships (without sails) were constructed, and that a pictographic script was in existence. Clothing, of which there are considerable remains, was made of skins and wool, but traces of linen are very rare; indeed, implements for spinning and weaving are unaccountably wanting in Scandinavia before the opening of the Iron Age. Burial customs roughly correspond to those of England, but the sepulchral pottery differs. In the first part of the Bronze Age the dead were buried unburnt in stone cists or in tree-trunks split and hollowed for the purpose. Later, as in Britain, the bodies were burned, and the ashes preserved in small stone cists or in simple urns of pottery. The graves were generally covered with a barrow or cairn, and in many cases the central and primary grave is a cist, while other later interments have been made in the mound (as figs. 56, 57).

The evolution of the celt in Scandinavia took a peculiar turn,

and according to Dr. Müller the socketed form (fig. 138, left), was a direct copy in metal of the flanged pattern with its wooden fork and spiral binding. The points of the forked handle are also re-

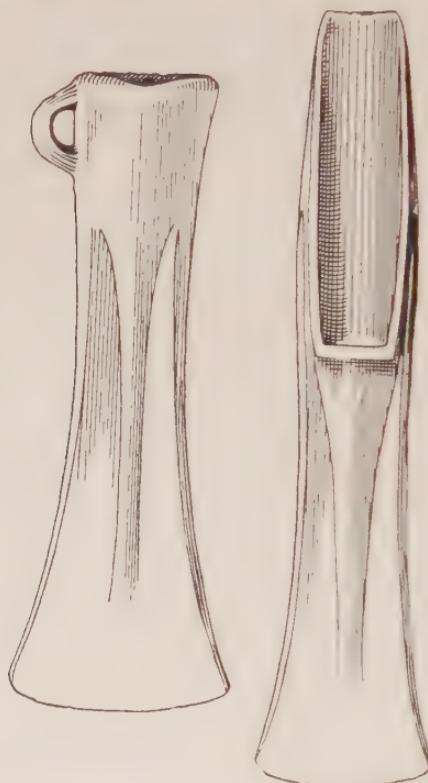


FIG. 138.—Socketed celт and palstave, Denmark.  $\frac{1}{2}$

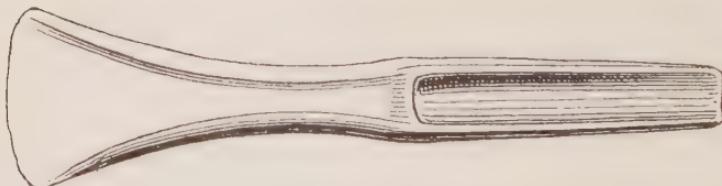


FIG. 139.—Slender palstave, Denmark.  $\frac{1}{2}$

produced in bronze on either face of some palstaves (fig. 138, right), but a more attractive form is the narrow palstave (fig. 139), which is often highly ornamented. One such specimen has been found still attached to a shaft 64 in. long in a straight line (with-

out elbow), which had an ornamented bronze knob at the end. It was therefore used for thrusting, and accompanied a dagger and spear-head in a stone cist under a barrow on Gunderup Heath, Aalborg. Only one winged specimen has been found in Denmark, and that was probably imported from Italy; other types reached Scandinavia from Britain.

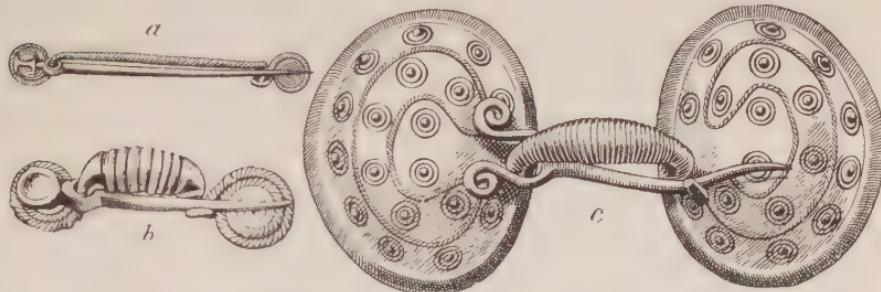


FIG. 140.—Evolution of the Scandinavian brooch. *a*, Holstein; *b*, Bornholm; *c*, Glostrup, Zealand.  $\frac{1}{2}$

All these specimens seem to date from the second period, at the end of which appeared the safety-pin type of brooch (fig. 140, *a*), which, however, has a perforated pin instead of the usual coiled spring. To this period (not later than 1200 B.C.) also belong some of the swords (as fig. 142), with bronze grips and pommels ornamented with spirals and other patterns, engraved or in open-work. A subsequent period is marked by more angular pommels (approaching the lozenge) on the swords; brooches with stout and arched bows (fig. 140, *b*), and cupped or ring-heads to their pins; and socketed celts of medium length. Then come bronze torcs much like those in Britain, bronze *tutuli* or disks with upstanding centres; spectacle-brooches (as fig. 140, *c*), evidently an exaggerated form of *b*, and short socketed celts with triangular facets (fig. 141); to be followed by the torcs with thick hook-fastenings, and alternate winding. Most of the small bronzes—pins, razors, tweezers (fig. 144), studs, clasps—as well as bone quatrefoils with pierced

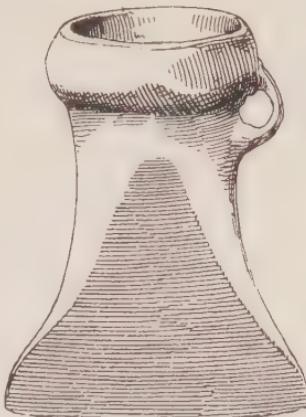


FIG. 141.—Socketed celt, Denmark.  $\frac{2}{3}$

centres belong to the late Bronze Age, and show the trend of native art, which transformed motives derived from the south.

Two distinct groups of swords will be noticed in this Case one with straight or slightly leaf-shaped blade and flanged grip once mounted with bone, horn, wood, or even lead; and the other with the grip complete, or barred for filling with some other material. The first must be regarded as imports into Denmark from Central or Southern Europe, as early as the third of Dr. Müller's nine periods (say twelfth century B.C.). One of these has the edges of the grip plated with gold, no doubt locally, but their original home is at present a mystery, some (as Sir W. Ridgeway) insisting on the Danube area. The other type

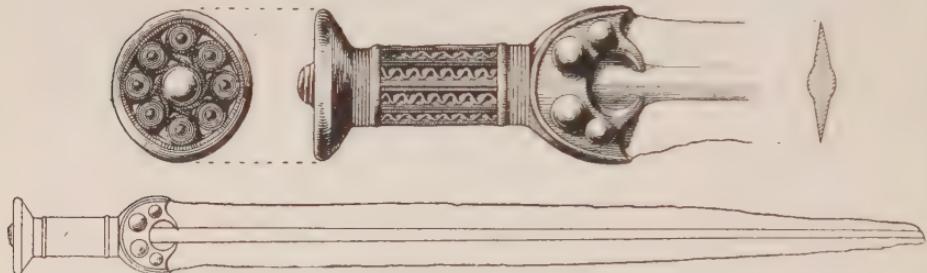


FIG. 142.—Sword with openwork handle, Veile, Jutland.  $\frac{1}{3}$  and  $\frac{1}{6}$ .



FIG. 143.—Sword with 'antennae', Denmark (?).  $\frac{1}{6}$

(fig. 142) was a local Scandinavian development in the best period; and while ornament is lavished on the handle, often in openwork, the blade tends to be straight sided. Fig. 143 represents a very late form, with *antennae* on the pommel. Its provenance is uncertain, but the type is common in Central Europe and is sometimes called after Ronzano, marking the opening stage of the Hallstatt period.

Several bronze trumpets of the late Bronze Age are still in working order and are known as *lurer* (p. 107): an imperfect specimen is here exhibited, with a row of loops on the inner curve below the mouthpiece for attaching pendants. Adjoining this are several torcs or twisted bronze collars, one from Jutland being of special interest. It consists of three similar loops arranged like the Cintra specimen (fig. 168), and the opening at the back is closed by a limb fixed at each end by a pin, which also passes through

the terminals of the loops. The long spiral armlets were evidently imported into Denmark from Hungary (Case D).

What looks like a boat on many of the razors (fig. 144), with high stem and stern often terminating in swans' heads, is a solar symbol flanked by birds, parallel to (but not derived from) the Egyptian sun-disk between *uracus* snakes. Examples more or less perverted are found on bronze vessels presumably made in North Italy and exported to Central Europe and Scandinavia, but authorities disagree with regard to their date within the Etruscan period. About three centuries before these bronze vessels, the sun was represented in Denmark by a gold-plated disk engraved with spirals, found in Trundholm Moss (p. 110).

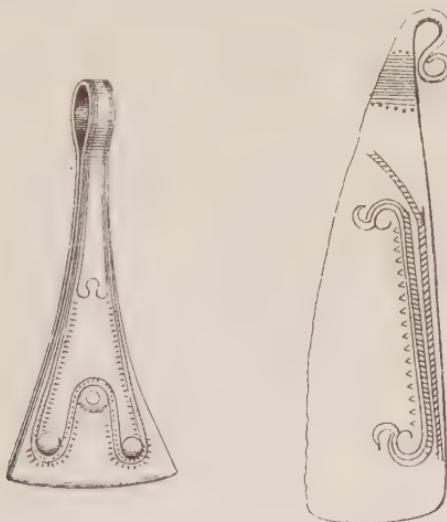


FIG. 144.—Tweezers and razor, Denmark.  $\frac{2}{3}$

The artistic standard of Scandinavia can be estimated from the thin bronze bowls or boxes with loops for attachment to the girdle, the ornamented face showing in front. That with a scroll-design on the base belongs to the fifth period of Montelius, and forms the last link in the chain of development. A fragment of earlier form, with pointed base, has traces of the clay which formed the inner mould, the interstice having originally been filled by a wax model. The running-spiral motive reached Scandinavia in the same period as the brooch, and was no doubt derived from the south of Europe, where it existed in the neolithic period (Malta and Balkans). It was used everywhere in the Mycenaean area, having appeared in Crete in the early Minoan period (p. 159).

The small series of Bronze Age pottery from Denmark exhibited

in Case 36 is sufficient to show the difference between contemporary wares on either side of the North Sea. There are debased beakers (pl. ix, nos. 10, 12), descended from the local neolithic type; tall jars with 'rough-cast', resembling specimens from Saxony (pl. ix, no. 3) and Hungary in the adjoining Case; and various forms of the cinerary urn (pl. ix, no. 11), but the ware is quite unlike that of our Bronze Age and rather like the early Iron Age products of Britain and France. On the whole, the Bronze Age pottery of Denmark shows cultural relations with the south-east (Saxony and Silesia); and nearly all these specimens are assigned to the later Bronze Age.

#### GERMANY: Cases G, 31, 32

Germany during the Bronze period was traversed by the two main trade-routes which owed their existence to the wealth of amber on the west coast of Denmark and the South Baltic. The first ran from the head of the Adriatic near Venice up the valley of the Adige, through the Brenner Pass, and down the Inn to Passau, where it joined the Danube. The Bohemian Forest was then crossed to the Moldau, and the North Sea gained by following the Elbe to its mouth. The second route struck off from the Gulf of Trieste, north-east to Laibach, thence to Gratz, and down the Leitha to the Danube at Pressburg. The tributary March was then ascended, and after crossing Moravia, the route passed through Silesia along the Oder, while the Vistula was reached by striking across Posen, the principal terminus being Dantzie. In connexion with the trade-routes it should be mentioned that during the developed period of the Bronze Age the spiral, so prevalent in Aegean and Egyptian art, hardly occurs on the Continent west of the Elbe route just described; but as it is clearly seen on the carved stones of the New Grange barrow, co. Meath, and has been already referred to in connexion with the chalk drums from Yorkshire (p. 81), it probably reached the north-west in earlier times by a different route.

The early stages of the Bronze period are represented over a very wide area, embracing practically all the high ground of Central Europe, from the east of Bohemia to the Middle Rhine and Upper Rhone, while Scandinavia was partially isolated by the flat country of Northern Germany, where the earliest forms are not so common. Within the larger area the closest connexion seems to have been between Bavaria, Würtemberg, Austria, Upper Hungary, and Bohemia, identical types of pins and bracelets being found from the last country as far west as the Rhine and Rhone valleys. Southern influences are proved by the presence of a Mediterranean shell (*Columbella rustica*) in graves in



0 1 2 3 in.

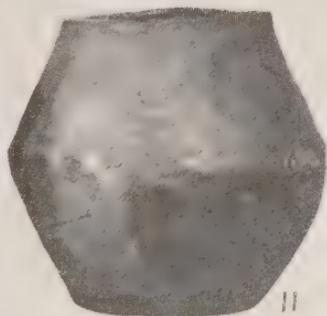


PLATE IX. SEPULCHRAL POTTERY FROM THE CONTINENT.

(Cases 31-36, see pp. 136, 140, 144)



Rhenish Hesse and in the basin of the Rhone, and of Egyptian glass beads in South Germany ; while at the close of the Bronze Age 'cordoned' vessels of North Italian origin were exported into Bohemia as well as into Hungary (p. 144).

The forms characteristic of the various stages of development are here neither so numerous nor so widely recognized. Certain types, however, afford important evidence of date ; for example, swords with octagonal hilts seem to belong to a stage corresponding to the second Scandinavian period of Prof. Montelius, while the brooch frequently occurs about the same time, a fact which is held by Sir W. Ridgeway and others to prove its derivation from Central Europe. In North Germany, as in Denmark (fig. 140), there is no spiral spring at the head, but the upper end of the bow passes through a hole near the head of the pin.

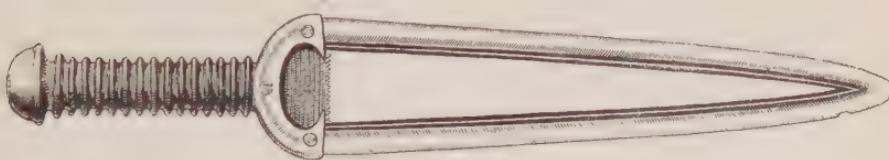


FIG. 145. —Dagger, Neuenheiligen, Langensalza, Erfurt.  $\frac{1}{3}$



FIG. 146.—Piek or ingot, Neuenheiligen.  $\frac{1}{4}$

The earliest period of the Bronze Age in Germany is well illustrated by the important discovery at Neuenheiligen (Langensalza, Erfurt) in 1776. Part of the find, from the collection of Dr. G. Klemm, of Dresden, is here shown, and includes examples of the flanged celt, of which over sixty were found ; a dagger, possibly of copper and formed by hammering, with the handle in one piece with the blade, resembling a flint dagger ; another dagger of more elaborate form (fig. 145), the grip cast separately ; blades, with part of a shaft, of halberts like the complete one in this Case (fig. 147) ; and a pick or ingot (fig. 146) with comparatively small shaft-hole in the centre. In some cases (one from Cochem on the Moselle and another from Lord Avebury's collection, both of the double-axe form) the hole is too small to admit even a metal shaft, and it has been suggested that the raw material was imported in this form (somewhat like the iron osmunds of the Middle Ages), several pieces being held together by a cord passed through the central hole. One specimen with this small

perforation has been analysed and found to be of pure copper; and it is not improbable that more than one piece in the Neuenheiligen find has no tin in its composition. They are regarded by some as currency, and the weights are 2,535 grammes (Cochem) and 3,260 grammes, roughly corresponding to four and five units of the standard suggested, and here represented by the Neuenheiligen specimen (607 grammes).



FIG. 147.—Halbert, Trieplatz, Potsdam, Prussia.  $\frac{1}{6}$

Daggers like fig. 145 were evidently of local manufacture, based on the Italian terramara types also found in Germany. Another group of the early Bronze Age is from Beitsch, near Pförten, Frankfurt-on-Oder; the ornamented dagger or halbert-blade serving to date the conical helmet and swelling torcs with rolled terminals of which there is another example in this Case. Other objects of the same early date are the remarkable halbert from Potsdam (fig. 147), the modern appearance of which is partly due to cleaning; and a dagger found with a slender celt near Weimar.

It was from celts of this type that the long socketed celt of Scandinavia was ultimately derived (p. 132).

In the series of German celts the winged variety is predominant, though the palstave without loop occurs as well as socketed forms. A small group from Camenz, Saxony, formed part of a hoard which included examples of the celt, spear, bracelet, torc, and sickle. Of the last there were about twenty specimens, of two kinds, with a rivet hole and pin respectively for attachment to the handle; and the celts were all of the winged variety here

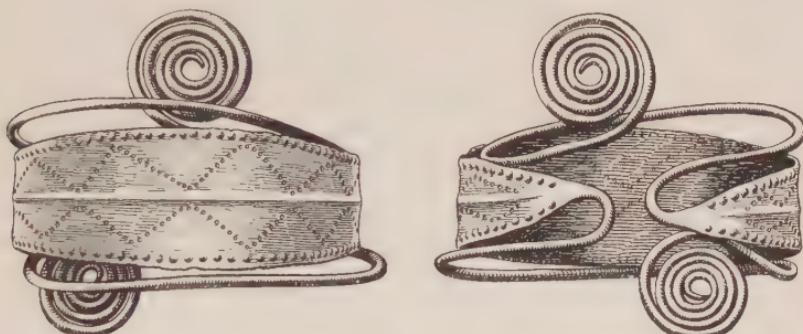


FIG. 148.—Bronze anklet with spirals, Hohenzollern, S. Germany.

exhibited. A coiled ring of twisted bronze like one from Woolmer Forest (fig. 42) was also included in this hoard.

An interesting addition to the series is the gift from Sir John Brunner and Sir Henry Howorth of grave-finds and hoards from Degenfeld, near Ebingen, Würtemberg; Sigmaringen and Hohenzollern in South Germany. A pair of anklets from a barrow consist of a broad band ending in stout wires coiled at the terminals (fig. 148), a type that seems to be represented in Spain (p. 155). A group in the Greenwell collection, from Haldensleben, Magdeburg, includes two spear-heads, two 'diadems', and two torcs with alternate twist, showing a connexion with Scandinavia, and a coiled ring of gold wire found near Bautzen in Saxony (fig. 149) is dated by the occurrence of this peculiar form in Danish cist-graves (latest neolithic) in association with flint daggers. Many of the spear-heads have slightly incurved edges, like some from Italy (Case C). A knife with double curve, of Swiss type (as fig. 125), accompanied a degenerate form of the northern brooch (derived from fig. 140, c) at Berbisdorf, Radeburg, Saxony. Two of the swords show a connexion with Hungary (as



FIG. 149.—Ring of gold wire, Saxony.

fig. 153), and there is a sword-handle of Mörigen type from Saxony (as fig. 131). Pins are many and various, and there are torcs of several kinds, one heavy specimen found with two armlets near Mayence being very similar to one from the Thames at Westminster.

Pottery of peculiar technique, known as cord-pattern beakers (*Schnurbecher*), is represented by a specimen in Case 35 from Benndorf, Merseburg, Saxony (pl. ix, no. 1). The ornament is almost confined to the neck, and was produced by impressing cords in the clay before firing. The chief localities of the type are the Main and lower Neckar valleys, the neighbourhood of Halle and Leipsic, and the upper basin of the Elbe in Bohemia; but its influence was also felt in the neighbouring countries.

A part only of the pottery exhibited in Cases 31-35 can be assigned to the Bronze Age, and this is known as the Lausitz (Lusatian) type, the term including parts of Saxony, Brandenburg, and Silesia. This well-made ware assumes various forms, and was widely distributed between the River Theiss in Hungary and the Rhine in the period immediately preceding Hallstatt, and also in the early Iron Age. The paste is smooth and yellowish, and the decoration consists mainly of shallow grooves, horizontal or sloping, vertical or arched, and conical bosses on the shoulder (*Buckelurnen*, as on pl. ix, nos. 4-9). The grooving has been traced to certain neolithic wares in north and especially north-west Germany, and the buckler-shaped ornament may be a development of the primitive knob, but strikingly resembles a group found in the seventh layer (from the bottom) at Hissarlik; and it may be mentioned that a black two-handled cup of Trojan type with similar projections has been found intact in the Thames gravel at Barn Elms, near Hammersmith. The use of these conical projections has been traced from the middle Elbe (about 1500 B.C.), through Hungary (in the late Bronze Age, about 1200-900) to Troy (before 800 B.C., two or three centuries after the Siege); and it seems clear that the type was disseminated from the Danube basin not only to Troy but also to the Italian peninsula —an interesting point in connexion with the bronze sword and safety-pin brooch. Pairs of conical projections are seen below the lip of an urn from Frankenhain (pl. ix, no. 3), and this roughcast ware is represented in Case 35 by other specimens from Germany and Hungary (Ungh) and in Case 36 from Denmark.

#### HUNGARY: Cases D, 35

This country is of exceptional interest, as during the earlier period of the Bronze Age its antiquities show many indications of external influence, while the later period witnessed a development

of Bronze industry which in splendour and artistic quality is only surpassed by the art of Scandinavia. The part of the Danube valley which lies to the west of the great bend of the river has proved specially rich in primitive remains of metal, for it lay upon the path of early commerce, and the first improvements in industry and art arrived there not very long after their invention. But it is in Transylvania and on the southern slopes of the Carpathians, far from the main routes of intercourse, that the later Bronze civilization chiefly flourished. Here, in undisturbed seclusion, the more elaborate types and ornaments were developed down to and beyond the time when iron had been introduced into neighbouring countries.

Hungary is remarkable for the great number of its copper implements ; and as this metal could be obtained in abundance on the spot, it was natural that it should have been worked at a very early date. It was indeed so abundant that it was exported alike into Northern Europe and into the north-west of Asia Minor, the fact being confirmed by the presence of a certain percentage of nickel characteristic of the Hungarian ores. Some idea of the date when copper was first manufactured into ornaments and implements may be gained from the discoveries in the late neolithic settlement at Lengyel, Tolna. Here beads of almost pure copper were associated with stone implements and pottery vessels with very high feet, one of which was painted with semicircles and spirals in red and yellow. The presence of the spiral indicates Aegean influence about 2500 B.C., when this ornament first appears in early Minoan art. Within these approximate limits the inhabitants of the Danube valley probably became acquainted with metals, either by independent invention or instruction from a more advanced civilization. Various evidences of southern and oriental influences seem to favour the second alternative, and among these may be mentioned : daggers of a well-known Cypriote form (fig. 178), presumed to date from the third millennium ; flat axes sometimes pierced at the butt, of a type occurring in Greece, the Aegean (fig. 174), and at Hissarlik ; double axes with central shaft-hole and both edges in one plane, such as are known in Crete, Greece (Case K), Cyprus, and Western Asia ; axe-adzes with central shaft-hole, also represented by examples from Hissarlik, the Greek Islands (fig. 174), and Sardinia ; spiral gold finger-rings (as fig. 149) almost identical with rings from the second city of Hissarlik ; bronze penannular collars with coiled ends, as known in Italy and Egypt ; pins of Cypriote form ; and the pottery vessels from Lengyel, the high feet of which recall certain types from Bohemia, Asia Minor, Spain (fig. 165), and Egypt. Such finds confirm the great antiquity of the Hungarian copper stage of culture, and of the succeeding earliest period of bronze : while the occurrence in a late neolithic cemetery at Lueska, Ungh,

of a pierced copper axe-head, is a further proof that there really was a transitional stage in which stone and copper were used together. The introduction of bronze must have taken place about 2000 B.C. At that early time Hungary, as has already been stated, formed one of a zone of countries united by a similar Bronze culture stretching from Bohemia to the Middle Rhine and



FIG. 150.—Battle-axe, Hungary.  $\frac{1}{2}$

and Upper Rhone. The elaborate battle-axes (fig. 150), of which examples are shown, are characteristic of Hungary, and are attributed by some to a comparatively early period. The existence of terremare at Toszeg and elsewhere is a link with Northern Italy.



FIG. 151.—Socketed celt, Hungary.  $\frac{2}{3}$

Many of the palstaves have the appearance of being pinched in between the edge and middle, forming a pocket in place of a stop-ridge. Some of the socketed types are ornamented in relief; others are sack-shaped (fig. 151). A slender double-axe is here included (fig. 152) as possibly from the Danube area, but it has no history: one edge is sharp, the other blunt, and both faces are ornamented by means of punches. The socket is not quite round and is closed at the top, a pin to secure the haft being still in position. A peculiarity of Hungarian swords is that the broadest part of the blade is between the middle and the point, thus giving the weapon a clumsy and ill-balanced appearance. Most are elaborately ornamented (fig. 153), and have an inch or two of serrated edge at the base of the blade.

This is also seen on the Courtavant type (fig. 137), which is represented in this Case by a specimen from the Danube near Ungar Altenburg, with three rivet-holes.

The free use of spiral ornament is characteristic of the later Hungarian Bronze Age. The spirals are frequently coiled from

thick bronze wire, often of lozenge or quadrangular section: in this manner are formed the ends of armlets, torcs, and brooches. With these is connected the heart-shaped gold pendant (fig. 154)

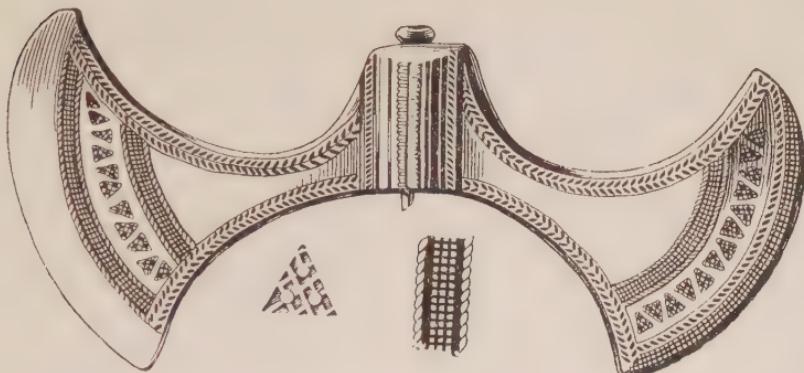


FIG. 152.—Ornamented double-axe of bronze.  $\frac{2}{3}$

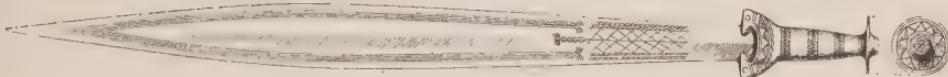


FIG. 153.—Sword, Zsujta, Abauj, Hungary.  $\frac{1}{6}$



FIG. 154.—Gold pendant and beads, Szöny, Hungary.

found with a gold chain at Szöny, Komorn, Hungary. The centre is hollow and the hooked terminals bent inwards; somewhat similar specimens have been found in the second city at Hissarlik (Troy, 2500-2000 B.C.), and in the third shaft-grave at Mycenae

(1700-1500 B.C.), but the type is referred by Dr. Hubert Schmidt to Siebenbürgen (Transsylvania). The chain consists of coiled wire cylinders and double cones. The smaller gold pendants are shown from Versec, Temes, Hungary.

The antiquities of the later Hungarian Bronze Age show so many similarities to those of Scandinavia, and yet are marked by so many differences, that though both groups must at one time or another have been affected by similar influences, neither can be described as the immediate descendant of the other. It seems probable that this Hungarian industry did not transmit the spiral and other features from south to north, but was rather an isolated local development.

Most of these later Hungarian finds are not from graves but deposits, in which several objects of the same type, sometimes all undamaged, occur together; thus on one occasion as many as twenty swords were found in one place. Such collections as these must have been either deposited for votive purposes or else concealed as valuable property; but there are also examples of founders' hoards containing 'scrap bronze' destined to be melted down and re-worked; a noted example of the latter was discovered at Hammersdorf in Transsylvania. With the swords there have been found imported bronze vessels of types which in the Eastern Alps belong to the Hallstatt culture, and in Italy are of the earliest Etrusean period; the inference being that Eastern Hungary did not use iron until long after the countries further to the south and west.

The bell-shaped beaker (*Zonenbecher*) is an important and well-defined type of pottery dating before the full Bronze Age in Europe, and possibly originated in Southern Spain (p. 157). In some parts it may belong to the neolithic period, but in Spain at any rate is contemporary with copper, and may be assigned to the Copper Age in those countries where that transition period has been established. The specimen from Erd, Buda-Pesth (Case 35) is figured on plate ix (no. 2) and may be taken as typical: another from a dolmen near Carnac, Brittany, is figured in the *Stone Age Guide*, tig. 157. It should be noticed that the greatest diameter is near the base, and the decoration is in alternate plain and incised zones, the ware being thin and of good quality. In shape and ornament the nearest British parallel is from Goodmanham, E.R. Yorks. (pl. vi, no. 3), though this is not necessarily the earliest form in this country (p. 67). The bell-beaker spread to Sardinia and Sicily, Brittany and the Channel Islands, and to central Europe as far east as Buda-Pesth.

## ITALY: Case C.

In the neolithic period North Italy was occupied by Ligurians, a non-Aryan people who buried their dead unburnt, and were in classical times confined to the seaboard of the Gulf of Genoa. They lived in hut-villages and caves, and were long-headed (dolichocephalic). At the end of this period a new race descended by Alpine passes into Western and Central Lombardy, and planted pile-dwellings in the lakes and in what are now peat-bogs. They were Aryans in the aeneolithic (copper and stone) stage of culture and burnt their dead, consequently human remains are scarce and doubtful. They seem to have been short-headed (brachycephalic) like the lake-dwellers of Switzerland, and their chief centre was Lake Varese. In the full Bronze Age these invaders were followed by their kinsmen from Croatia, Moravia, and Lower Austria, who entered Italy from the east, and established the *terramara* culture, spreading from the lakes to the provinces of Mantua, Brescia, and Cremona, and crossing the Po to the Apennines. These invaders are sometimes called Italici, and were later responsible for the Villanova culture, Bologna being their head-quarters in the early Iron Age. During the Bronze Age they pressed southwards, small groups settling here and there and even reaching the Gulf of Taranto; and it is to this people that the foundation of Rome about 750 B.C. is attributed.

The aborigines were not exterminated, but continued their neolithic culture, which was, however, influenced by their Aryan neighbours. For instance, at Remedello, near Brescia, a cemetery of more than 300 trench-graves was discovered, which clearly extended over a very long period, the celts exhibiting a development from the most primitive types imitating those of stone, to more advanced forms with flanges and expanding edges. These, like the primitive daggers from the same site, are all of copper; and at Santa Cristina, also in the province of Brescia, a flat copper celt was found with one of the beakers characteristic of the transitional period between stone and bronze (p. 144).

Possibly to this population are to be attributed a number of rude engravings on slabs or the solid rock high up in the Monte Bego district of Liguria. They represent ploughing scenes and various weapons and implements, some clearly of metal, but their purpose is obscure. The specimen exhibited (fig. 155), with the head of an ox, from Val Fontanalba, over 7,000 ft. above Tenda, was presented by the discoverer, Mr. Clarence Bicknell.

On the other hand, the first invaders lived in pile-dwellings like those in Switzerland (p. 117), on the borders of Lakes Maggiore, Varese, and Como, but never reached the Po; and the earliest

antiquities of metal in Italy are generally found in their district, though the forms occur elsewhere in Europe.

The principal objects found in the lakes consist of stone hammers, stone axes and chisels, chipped flint saws, arrow-heads and scrapers, numerous implements and utensils of wood, flanged and winged bronze axes, bronze daggers with holes for rivets, socketed spear-heads, knives, two-edged razors, and pins. Bone and earthenware spindle-whorls are common, and there is a great variety of hand-made pottery with incised or impressed geometrical ornament. The ware is of two kinds: a fine, almost black quality, and a coarser, grey or reddish: and many vessels



FIG. 155.—Rock-engraving, Val Fontanalba.  $\frac{1}{3}$

are provided with pierced projections for suspension. These handles assume a variety of unexpected forms and are useful for dating as well as for establishing relations with peoples outside Italy. Many are common to both sides of the Adriatic.

The second wave spread over most of the Po valley, and were responsible for the full Bronze Age culture of North-east Italy. Besides their lake-dwellings on the Lake of Garda, they constructed, mainly south of the Po in the province of Emilia, a large number of settlements of a type next to be described.

The terremare receive their name from *terra marna* or marl earth, a phrase used by the peasants of Parma, who were in the habit of carting away the rich soil formed by these prehistoric deposits as a fertilizer for their fields. They are low oblong

mounds, with a minimum area of about seven acres, in most cases above the level of the surrounding country, but sometimes the accumulation of alluvial soil brought down by the Po and its tributaries has completely concealed them from view. The terramara settlement began as an enclosed village on level ground surrounded by an earth rampart and an outer moat. The interior was occupied by rows of circular thatched huts, probably with wattle and daub walls and plank floors, built on piles some 6 ft. to 9 ft. in height. As it seems to have been the custom for the inhabitants to allow all refuse to accumulate in the spaces between the piles, where it was doubtless often covered with mud deposited by river floods, the ground level was constantly rising, so that it often became necessary to re-erect the houses on fresh piles and increase the height of the rampart. In this manner it is possible to explain the existence of the superimposed settlements found on many of these sites, and to account for the height of many of the mounds above the surrounding plain. Traces of conflagration have frequently been met with, and it has been conjectured that when reconstruction had to be undertaken, villages were deliberately burnt down to make way for the new ones to be built above them; but the chance fires which must frequently have occurred in settlements formed of inflammable materials may well account for many of these instances. The *terra marna*, the rich soil so much in request for agricultural purposes, is that formed by the successive accumulations of *débris*, and consists of narrow undulating layers of variously coloured earths: it is these strata which have yielded the greater part of the antiquities discovered. Special mention may be made of the terramara Castellazzo (Fontanellato in the province of Parma), which was surrounded by a ditch filled with running water, and divided into four quarters by two streets cutting each other at right angles. Within the enclosure on the east side was a rectangular terrace, also surrounded by water, and probably serving a religious purpose; while at two points beyond the outer ditch were rectangular cemeteries, one similarly enclosed, the ashes being placed in urns on platforms supported by small piles, so that the last resting-places of the dead resembled their homes during life. Near one of these cemeteries was a burning-ground, where the bodies had been consumed by fire.

It may at first sight appear strange that the people of the terremare should have taken the trouble to build pile-dwellings when they did not live in lakes or marshes; but they probably adopted the custom when they lived further north as lake or marsh-dwellers in the stricter sense of the term, and may have continued the old method of construction partly from a spirit of conservatism, partly from the necessity for keeping the floors dry in a situation frequently damp and sometimes inundated. It

may be recalled that houses built on piles over dry land are no uncommon thing in the modern savage world, especially in the Malay area, and that the sense of security is increased by living at this elevation whether the settlement is surrounded by water or not.

As a class the Italian lake-dwellings are earlier than the terremare, stone and copper implements being most numerous in the settlements of Lombardy, and bronze predominating in the province of Emilia south of the Po. The types resemble those already described from the lakes, the flat type with flanges or wings being the prevalent form of bronze axe, while swords are extremely rare. The pottery is also similar to that of the lakes, and approaches the *bucchero* of later times, the most characteristic type of the terremare having handles terminating above in two horn-like projections, a peculiarity which occurs in a more rudimentary form in the lake-dwellings in and near the Lake of Garda. Ornament is purely geometric and chiefly confined to such figures as triangles and concentric circles. Daggers with triangular blades (like fig. 135) and cylindrical handles are frequent enough to be described as the terramara type, and these weapons are considered to date from about 2000 B.C. The brooch came in towards the end of the terramara period, about the fourteenth century B.C.: it was of a simple form like a safety-pin and is known as the Peschiera type, after a settlement at the south end of Lake Garda.

The inhabitants of the terremare were agricultural, raising crops of wheat, barley, millet, beans, and flax: planting the vine, though probably unable to make wine: and keeping cattle, sheep, pigs, goats, dogs, and horses. They wove garments of flax, and were able to work their own metal, as is proved by the occurrence of moulds in which implements were cast.

The celts exhibited are in some cases of unknown provenance, but suffice to show an evolution from the thick flat specimens imitating stone to the spade-shaped implement (fig. 156, right) that survived into the Early Iron Age and was characteristic of Italy. Several primitive forms are exhibited from Italy and Sicily; the flanged celts (fig. 156, left) are often of unusual weight (province of Rome and Palermo), and the wings first appear in the middle, gradually approaching the butt, which is often hollowed by bending over the two jets formed at the mouth of the mould. This feature may be noticed in some French specimens (Case E), and another parallel is the spoon-shaped celt from Lodi, between Milan and Cremona (cf. fig. 130).

Though the halbert is not unknown in Italy (as from Montemerano, Tuscany), the specimen from Calvatone, Cremona, bears a striking resemblance to Irish specimens (fig. 5); and by a curious coincidence two in table-case P (fig. 6) can only be matched in

Italy (Gambara, Brescia), where it is noticed as a rarity (p. 28). There is a smaller halberd from the neighbourhood of Frosinone, fifty miles south-east of Rome.

Swords of the Bronze Age are not common in Italy, but two here shown (from Frosinone, Latium; and Bisignano, Calabria) evidently belong to a common European type. The blades are only slightly leaf-shaped, the tangs broad and long, with flanges

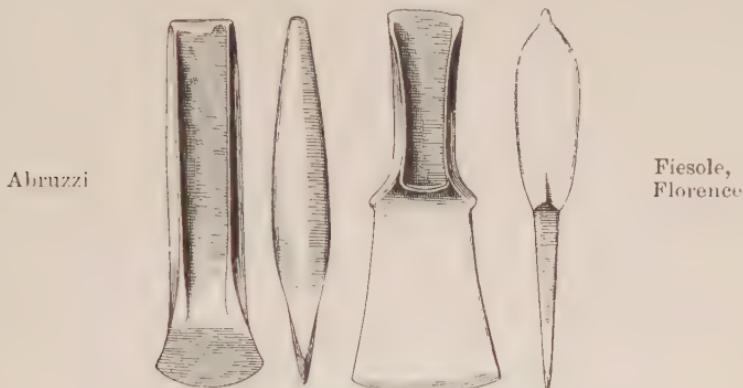


FIG. 156.—Flanged celt and palstave, Italy.  $\frac{1}{4}$

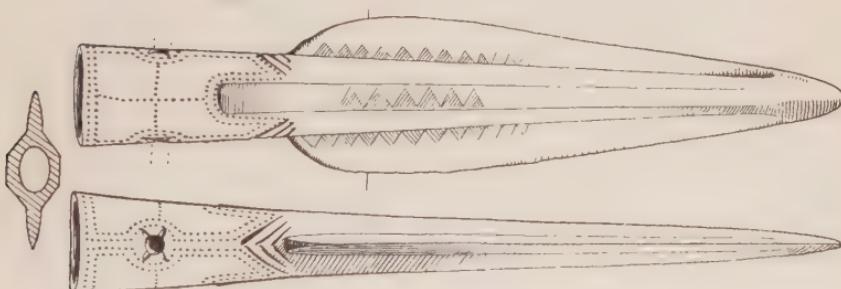


FIG. 157.—Ornamented spear-head, Bari, Apulia.  $\frac{1}{2}$

and square prolongation for a pommel. Though occasionally found in the Mycenaean area, this type is now thought to have come originally from the southern Danube area, and to have spread north as far as Scandinavia, where it served as a model in the twelfth century B.C.

The spear-heads are fully developed, and in several cases have faceted sockets. One illustrated (fig. 157) has hatched triangles and rows of dots. Two of four found in a grave at Bomarzo, near Viterbo in the Campagna, are from the same mould and

attain the length of  $38\frac{1}{2}$  in. Long cylindrical ferrules from Sicily and the mainland may be compared with British specimens (fig. 31). Knives with double curves of the Swiss-lake type (fig. 125) are shown from Sicily, Tuscany, and Lake Como: and several perforated axe-heads come from the two islands and the southern half of Italy. This is a common Italian type dating from the latest Bronze or transition period (unlike the Scandinavian axes which are early); and the example from Pozzuoli, Campania (fig. 158) is perhaps from the same mould as one from Achaea at Cambridge. They have been described by Prof. Bosanquet, who refers to the symbolic marks in relief (made in



FIG. 158.—Perforated axe-head, Pozzuoli.  $\frac{1}{4}$

the mould), and considers the Greek specimen of Italian origin. Though many of the flanged and winged celts are found throughout the Italian area, other finds in South Italy, Sicily, and Sardinia tell a different story. Painted pottery, contrasting with the *bucchero*-like terramara ware, and dating from the first Siculan period, has been found near Syracuse and points to Thessaly (Chaeronea ware), the ornament resembling that of early Cyprus pottery; and other finds in the island (such as imported vases of late Minoan type and bone ornaments from Castelluccio closely resembling finds in the second city of Hissarlik) show that Sicily owed as much to Aegean civilization as Sardinia did to Spain.

#### SPAIN AND PORTUGAL: Cases J and 38, 39.

The most important discoveries made in the Iberian Peninsula are those of MM. Henri and Louis Siret in the district along the Mediterranean coast between Almeria and Cartagena, where settlements and tombs dating from the neolithic to the Bronze Age have been brought to light. The transition (aeneolithic)

period is represented by polished stone implements, flint flakes, and arrow-heads mainly from Campos; and the Bronze Age more fully by remains from El Oficio, Lugarico Viejo, Fuente Alamo, Zapata, Ifre, and El Argar. At the close of the Stone Age there appears to have been a time of transition in which worked flints of great perfection were associated with copper implements, while bronze was still unknown. The settlements of this period were placed upon low plateaux, and consisted of groups of boulder-built houses roofed with reeds and branches; the dead were buried in tombs containing several bodies. The copper objects comprise flat celts, awls, knives, and saws, and the pottery consists of urns and bowls usually ornamented with incised geometrical designs, and either round or flat at the base, but especially the bell-beaker, which in Spain dates exclusively from the Copper Age. Some of the transitional sites present features which indicate external influence from Africa (as ivory and ostrich-egg shells) and the North (as amber); and that at Los Millares in the province of Almeria, explored by M. Louis Siret, is especially remarkable. Here, in addition to graves of dolmen type, there were chambered tombs with vaulted roofs, sometimes entered by long passages with lateral cells. Such tombs, whether constructed, or hewn out of soft rock, can be traced in their different varieties from the islands of the Western Mediterranean, through Spain, Portugal, and France (especially Brittany), to the British Isles and Northern Europe, marking the course of what is probably the oldest route of intercourse between East and West. The starting-point is, however, uncertain, and it may be pointed out that while the Tholos or bee-hive tomb of Mycenae or Orchomenos dates from about 1500 B.C., similar chambers in Spain go back as far as the Copper Age, a thousand years earlier, and were evidently evolved from earlier local forms. In them have been found beads of *callais* (a kind of turquoise), objects of carved ivory, and small 'idols' of alabaster, limestone, ivory, or schist, resembling those of the early Minoan period (p. 164) found in the Aegean islands, and at Hissarlik (second city of Troy, before 2000 B.C.).

During the period in which bronze implements were manufactured, the settlements were built on higher and more defensible plateaux, as if the inhabitants lived in fear of attack. The most remarkable is that at El Argar, which is described as a prehistoric citadel. The most characteristic features of this civilization are the manufacture of pottery (Cases 37-9) peculiarly graceful in design, and the free use of silver. A few stone and flint implements continued to serve for special purposes, such as sharpening knives or mealing grain, but the majority were of copper; and bronze was now used for weapons. The commonest arms were daggers, but a primitive form of bronze sword also

occurs (fig. 159). Halberts (fig. 160) which in Spain were derived from copper and stone forms, were common, and have also been found in North Italy (Case C), North Germany (Case G), and Ireland (Case P). Silver was used for ornaments as well as for rivets to fasten daggers or halberts to their hafts; its appearance at so early a date is exceptional, and probably to be explained by the presence of very pure ores in the neighbourhood either on



FIG. 159.—Bronze sword,  
El Argar, Almeria.  $\frac{1}{6}$



FIG. 160.—Halberd, daggers, and knife,  
El Oficio, Almeria, Spain.  $\frac{1}{3}$

or near the surface of the soil. As a rule, silver is not common until the Iron Age, but it is also found at Los Millares and in the early graves in the Islands of the Aegean. The ornaments of the El Argar period consist of rings, bracelets, and pendants fashioned out of copper, bronze, silver, and occasionally gold, by bending a thick wire into a spiral coil. Silver diadems, of which seven in all were discovered with interments, form a notable feature (fig. 161). Necklaces were made from beads of bone, ivory, callaïs, serpentine, and various kinds of shells. The celts are all of primitive type, and well illustrate the advance from the

copper pattern to the more slender forms possible in bronze (fig. 162). Arrow-heads of bronze are found; and the awl, familiar

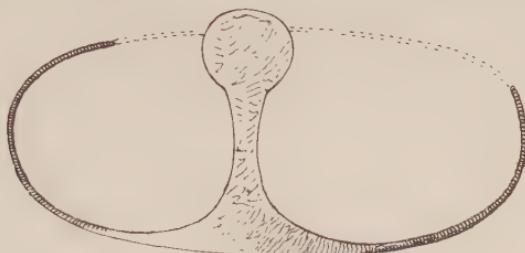
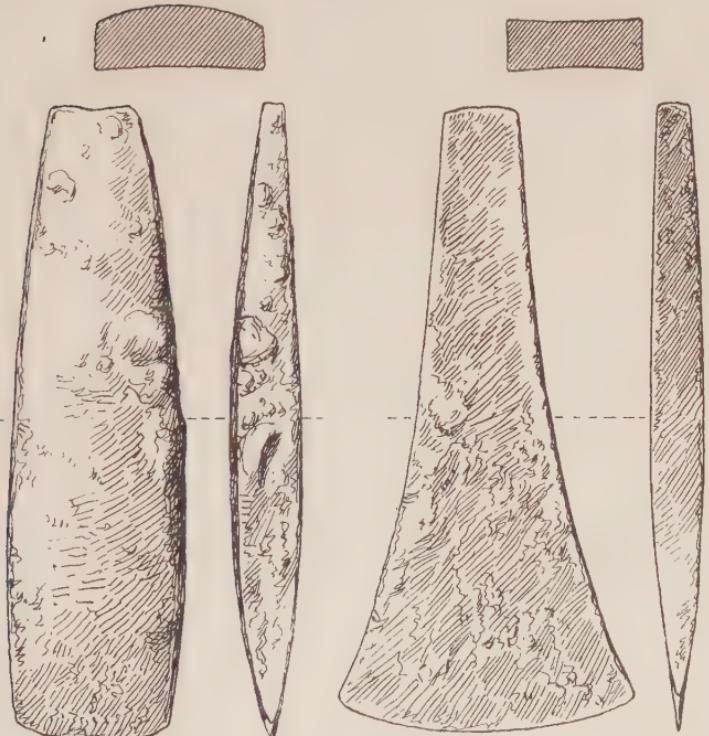


FIG. 161.—Silver diadem, El Argar. 1/3



### Lugarico Viejo (copper)

### El Argar (bronze)

FIG. 162.—Primitive celts, Almeria. 12

in British barrows, was also in use, one specimen remaining in its original bone handle (fig. 163).

The early civilization revealed by MM. Siret was not entirely confined to the strip of coast between Almeria and Cartagena,

but is represented, though on a less remarkable scale, in the other Mediterranean provinces of the south, remains being known from Granada, Cordova, Seville, and elsewhere. It spread along the east coast to the Ebro basin and Catalonia; to the islands of the Western Mediterranean, and westward to Portugal.

The civilization of El Argar was followed, whether without intermission it would be difficult to say, by a later development of the Bronze industry in Spain and Portugal, the remains of which are scanty, and the middle Bronze Age is still obscure. There was, however, a later Bronze Age in Spain as elsewhere, and to this may belong certain cremated remains found in urns in close proximity to unburnt skeletons of late neolithic times. These remains were originally attributed by the discoverers to the early transitional period when metallurgy was first introduced; but cremation at such a date would be most abnormal (p. 22), and its occurrence would at once suggest the probability of secondary interments introduced at a later time, and disturbing the original disposition of the graves.

The metal culture of south-eastern Spain, as represented by



FIG. 163.—Awl in bone handle, El Argar.  $\frac{2}{3}$

the Siret collection, has its origin at a very remote period, when copper gradually appeared side by side with stone. There are facts which have suggested that bronze was introduced by foreign importation, but however that may be, when once it had obtained a footing, it was worked by local industry, though copper was still retained. The analogy between Spanish objects and others from the opposite extremity of the Mediterranean, especially from Hissarlik, both in the neolithic age and also in the stage represented by El Argar, would seem to show that even this later period cannot in any case be more recent than 1500 B.C., and it is generally fixed about 2000 B.C. The primitive forms of the implements, and the occurrence of types like the halbert, which are always early (p. 28), may be cited in confirmation of this view. It may here be repeated that Spain formed a link in the chain of countries connecting the Mediterranean and the north-west in neolithic times, while its wealth in silver and other metals must have early proved an attraction to the peoples of the Mediterranean, even before the time of the Phoenicians. All these facts justify the belief that its inhabitants were among the first to profit by new inventions.

Bronzes from other parts of Spain include forms of special

interest. Two blades from the province of Jaen have silver rivets for fixing the handle ; and the sickle from Castropol, Asturias, is a rare form. Flat celts predominate, but there is a good series of double-looped palstaves (fig. 164) leading up to the celt with trunnions of the Hallstatt period. The home of the double-loop is uncertain, as examples have been found in Western France (one from the Charente in Case E), and several are extant from Somerset and Cornwall (Case P). Certain Spanish examples are, however, peculiar in having a lump of lead in the cup-shaped butt of the implement ; and M. Siret has shown that the lead was poured into the mould before the bronze had set, the fusion of the metals being naturally imperfect. The effect of this addition is to spoil the implement, but the reason for this waste of good metal is not apparent. A sword with slots for the rivets, and peculiar blade with shoulders at the base, can be reasonably explained as an import from France (Case E).

A chain of six spiral rings each of six coils, an oval ornament with curved wires, and two loops with tapering ends like an ear-ring, all of gold, were found in a girl's grave at Merida, Spain, probably dating from the end of the Bronze Age. The oval was probably worn on the ankle and the wires originally formed spirals, as in a bronze specimen from Avignon, Vaucluse, in Case E, and two from Hohenzollern, South Germany, in Case G (fig. 148).

The series of well-made burial urns and vases in Cases 38, 39, well represents the large number found by MM. Siret in the south-east of Spain. It reveals a surprising skill in modelling when it is remembered that the wheel was still unknown ; and betrays an exceptional feeling for beauty of form. The ware is principally dark grey in colour and unornamented, some vessels being rounded at the base (fig. 165) and requiring a ring, perhaps of clay or esparto grass, to enable them to stand upright ; others having elongated feet, which give them a very graceful appearance (fig. 165). High feet of a similar kind are known from other primitive sites within the Mediterranean area, such as Hissarlik (Troy) and Lengyel in Hungary (p. 141), and two of the vases in fig. 165 (top right and bottom) have parallels in the early Bronze Age series from Aunéitz in Bohemia. The dead were interred in a contracted position beneath the floors of the houses,

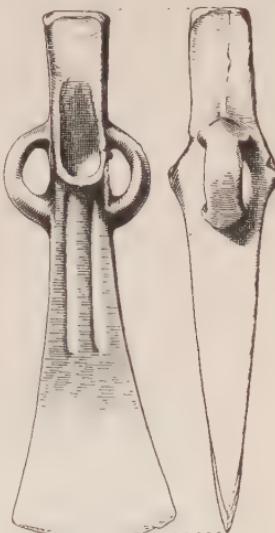


FIG. 164.—Double-looped palstave, Spain.  $\frac{1}{3}$

the bodies being either protected by stone cists, or inserted in large urns of red ware (fig. 166) laid on their sides. The last was the favourite method, and the urns were either sealed by stone slabs or closed by being placed together in pairs mouth to mouth.



FIG. 165.—Sepulchral pottery, Almeria, Spain.  $\frac{1}{2}$



FIG. 166.—Interior of burial urn, Almeria.  $\frac{1}{10}$

It is almost certain that the corpse was inserted soon after death while the flesh still adhered to the bones, for the imprint of skin has been remarked upon rings and bracelets, while hair as well as traces of clothing have been found. The custom of urn-burial without cremation is another of the features which point to an

influence from the East, for examples of this method of disposing of the dead are known at Biskra in Algeria, at Bargia Verezzi in Italy, in the Thracian Chersonese, in Asia Minor, and in Chaldaea ; it is interesting to note that in the New World it also occurs in California, New Mexico, Nicaragua, and Brazil.

The difficulty of making vessels of such large proportions as the burial-urns was met by moulding them in two portions which were joined while the clay was still moist. Traces of the joining are visible on both the examples exhibited ; and smaller vessels were also moulded in the ground or other matrix (fig. 167), and baked possibly by burning wood inside. The upper part of the vases on high feet were sometimes used alone (fig. 165), while the inverted foot served as a cup, the form being imitated in the manufacture of complete specimens.



FIG. 167.—Section showing manufacture of bowl, El Argar, Almeria.  $\frac{1}{8}$

Other objects in Cases 38, 39 are pounding-stones for grain, a piece of burnt wattle-and-daub showing the material used for huts, also casts of bronze objects and of a skull with reversed diadem and ear-ornaments as found in an urn (fig. 166). The open celt-mould could only be used for copper, but the specimen exhibited was for producing bronze celts, and is only the lower half of the mould.

Caves in the Ronda mountains and at Gibraltar belong to the same archaeological district and the same period, when copper was known in Almeria (as at Campos), but the rest of Spain was just passing out of the Stone Age. One of the Ronda bowls resembles the upper part of a human skull, and the pottery fragments belong to rather small vessels, ornamented chiefly with horizontal grooves. It was probably from these that the bell-beaker was evolved, the latter type being best represented in the southern half of Spain and dating from the full Copper Age. They are often finished with white inlay.

Originals and casts are exhibited of schist axe-shaped amulets, which emanated from Portugal and evidently represent idols of human form. These and the 'betyls' (tapering stone pillars), crooks and other varieties for ceremonial use belong to the

transition period and therefore cannot be confined to the Stone or Bronze Age (*Stone Age Guide*, p. 117, fig. 123). The other end of the Bronze Age in Portugal is represented by a massive gold collar from Cintra (fig. 168), resembling in form the triple bronze collars of Denmark (Case II), which are attributed to the third

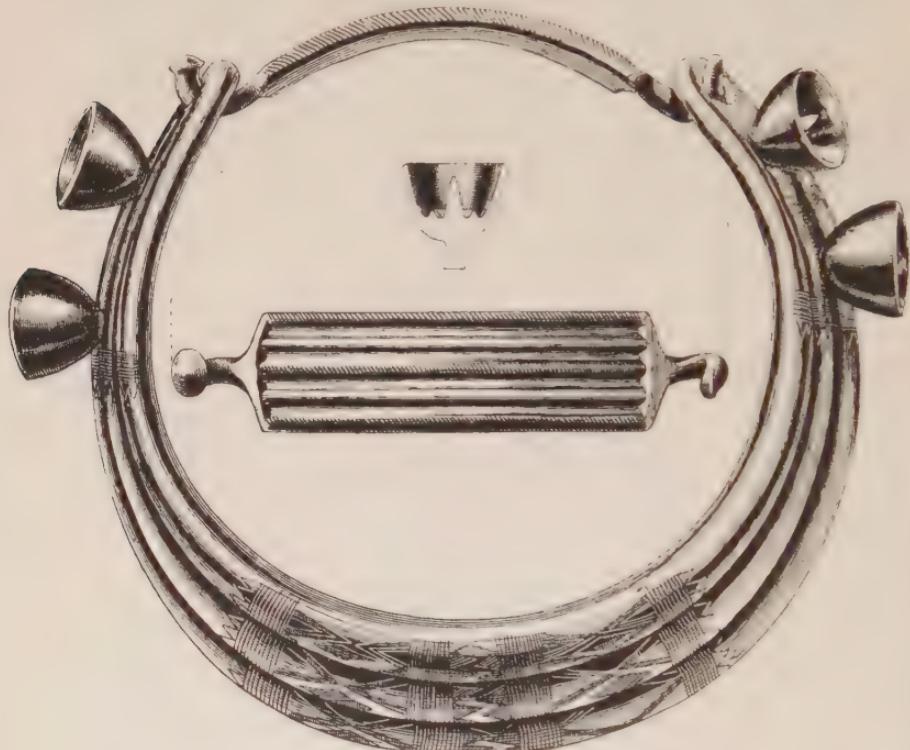


FIG. 168.—Gold collar, Cintra, near Lisbon.  $\frac{2}{3}$

quarter of the local Bronze Age. The four cup-shaped projections are a feature of the Hallstatt period, and occur on the pommel of a bronze sword from Whittingham, Northumberland : so that the eighth century is not an improbable date.

#### GREECE AND THE ISLANDS: Case K.

Antiquities discovered in Crete, to which the centre of gravity has shifted in recent years, are mostly preserved in that island, but some vases and casts of the principal objects are exhibited in the Greek and Roman Department (1st Vase Room). The first excavation on a large scale was due to Sir Arthur Evans, who

acquired the site of the ancient capital, Knossos, in 1900 ; and his discoveries have led the way in revealing a civilization which is now seen to have preceded and produced that of Mycenae, which Schliemann's work had led scholars to regard as the golden age of Greece. The Mycenaean group on the mainland represents only the closing phase of the Cretan Bronze Age, more closely connected with the half-mythical King Minos, whose name is now used to denote the whole of the Bronze Age in Crete. A distinct but parallel culture in the other islands is known as Cycladic, from the finds in the Cyclades off the north coast of Crete. As the chronology has an important bearing on Europe and the Near East, the following table is given to show the connexion with Egypt, which was a particularly intimate one in the eighteenth dynasty. Sir Arthur Evans has found a great depth of neolithic deposits below the Bronze Age site of Knossos, and divides the Minoan period into *Early*, *Middle*, and *Late* (indicated below by initials) ; each division is subdivided into three sections, and approximate dates appended, those of the Early Minoan being merely conjectural.

Cretan Neolithic period, perhaps 10,000–3000 b.c.

E.M.	I.	3000–2800.	III–V dynasties.
	II.	2800–2400.	VI dynasty.
	III.	2400–2200. (2nd city, Troy)	VII–X dynasties.
M.M.	I.	2200–2000.	XI dynasty.
	II.	2000–1800. (Kamáres ware)	XII dynasty.
	III.	1800–1600.	Hyksos (XIII–XVII dynasties)
L.M.	I.	1600–1500. (Shaft-graves, Mycenae)	Early XVIII dynasty.
	II	1500–1350. (King Minos ?)	Later XVIII dynasty.
	III.	1350–1100. (Mycenaean)	XIX dynasty.

(Traditional Greek date for Trojan war, 1194–1184 b.c.)

In the Early Minoan period appears the first Aegean painted pottery, and before the end of the period there is an abundance of the precious metals, as in the contemporary city at Hissarlik, (second in chronological order). Now appears for the first time in Minoan art the spiral, originally perhaps a coil of gold wire, such as occurs on pins in the so-called Treasure of Priam. It spread to stonework and pottery, and reached Egypt, Central Europe, Scandinavia, and Ireland. At Butmir in Bosnia it occurs on pottery of neolithic date, and was often carved on the megalithic sanctuaries of Malta. About the same time the pottery

kiln and potter's wheel were introduced into Crete from Egypt, where both were probably invented.

The Middle Minoan period saw the first palace of Knossos. Contemporary pottery of many colours, known as *Kamáres* ware, from a cave on Mount Ida was first published by Professor Myres. The occurrence of this ware on the twelfth dynasty site of Kahun in Egypt is an important link in the chronological chain and proof of intercourse between the two countries about 2000 B.C. (p. 167). Many of the shapes were copied from metal vases, and a high standard of technique was reached. Splendid buildings of hewn and squared stone were erected, and seal-stones cut in steatite (soapstone), these being often engraved with signs that have been shown by Sir Arthur Evans to belong to a hieroglyphic system. They were also impressed on clay tablets in the Babylonian manner; but their values and the language to which they belong are at present uncertain.

The acme of Minoan civilization was reached in the next period (L. M. i), by which time colonies had been planted on the Greek mainland; and the shaft-graves of Mycenae have furnished contemporary reliques of Minoan art. The glories of the Palace at Knossos are to-day widely known and appreciated, and a reasonable explanation of the Minotaur and Labyrinth incidentally provided; but more important for our present purpose is the decline of the Minoan naval power and artistic predominance, owing to successive invasions of barbaric peoples from the North (probably the Danube basin) by way of Thessaly into Greece. The first wave is identified with the Achaeans (about 1400), who appropriated the leading Mycenaean centres, and assimilated the Minoan culture to a certain extent, though retaining their own rite of cremation. After the destruction of the Palace, civilization ebbed in Crete, but the Minoan tradition was kept alive on the coast of Asia Minor and especially in Cyprus (Enkomi). The twelfth and thirteenth centuries marked a relapse in the Aegean world; and though Mycenae and other sites have yielded a rich harvest of artistic products, it was an army under half-civilized leaders that besieged and captured Troy, the sixth city built on the hill of Hissarlik a few miles inland from the entrance to the Dardanelles.

The second wave of immigration from the north was called by the Greeks the Dorian invasion, or the Return of the Heraclidae; and the Achaeans whom they found in possession became their slaves or subjects, or emigrated to Ionia on the Asia Minor coast. This event took place in the eleventh century B.C., and ushered in the Geometric period of Greek art. Both Achaeans and Dorians were Aryan and European, whereas the Minoans were non-Aryan and of long-headed Mediterranean stock, probably emanating from the North African coast. They seem never to have practised cremation

of the dead, and are now by general consent identified with the people called by the Egyptians Men of Keftiu, a name that seems to have signified Men from the Back-of-Beyond, evidently the same as the biblical Caphtor. The debased Minoan civilization of the thirteenth century B.C. was brought to Palestine by the Philistines in the time of Rameses III (about 1200), when they subdued the Canaanites by means of their superior weapons.

The bronze dagger here illustrated (fig. 169) is cast in one piece,



FIG. 169.—Bronze dagger with saw-edges, Crete.  $\frac{1}{3}$



FIG. 170.—Mycenaean sword, Ialyssos, Rhodes.  $\frac{1}{5}$

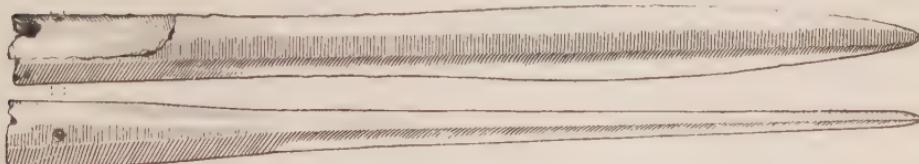


FIG. 171.—Mycenaean spear-head, Ialyssos.  $\frac{1}{3}$

and has a leaf-shaped blade of lozenge section, the edges being serrated except near the point. The projecting guard has more in common with the Mycenaean sword (fig. 170), but the blade and handle are in outline akin to the Central European pattern. There is a general resemblance to the Yorkshire sword cast in one piece (reproduction in Case Q).

Spoil from tombs at Ialyssos, Rhodes, secured by John Ruskin and presented to the Museum by him in 1870 dates from about 1400–1350 B.C., and includes a typical sword (fig. 170) and spear-head with faceted and split socket and a narrow blade (fig. 171). The former has lost its pommel, which was probably of ivory;

and while agreeing in outline with the fine series from Mycenae (casts in Greek and Roman Department), is quite distinct from the common European form, which passed into Greece and Italy (Case C) from the Balkans or lower Danube. From the bee-hive tombs (*tholoi*) at Mycenae (later than the shaft-graves but still perhaps of L.M. i date) comes an early variety of the safety-pin brooch not unlike the first Italian examples from Peschiera on the Lake of Garda (p. 148); and the brooch, like the European sword, was no doubt introduced by the Achaean invaders, neither being a product of Minoan civilization. A well-known tombstone from Mycenae is carved with a battle-scene, the charioteer wielding a sword like fig. 170, and his opponent holding a leaf-shaped blade much like the European pattern. The date is probably sixteenth century B.C., but the Ialysos finds appear to date 1400-1350 B.C. Somewhat later probably is the dagger (fig. 172) from Naxos, which has a handle like the Colophon knives (fig. 177), and a blade approaching the leaf-pattern.

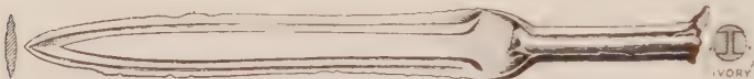


FIG. 172.—Bronze dagger, Naxos.  $\frac{1}{3}$

Relics of what corresponded to the Minoan period in the Cyclades (the circle of islands round Delos, between Crete and Euboea) have been partly obtained from shallow, rectangular cist-graves, lined with stone slabs, in which the bodies were placed in a squatting position. These antiquities, which cover the long period preceding the fifth settlement at Hissarlik, consist of daggers, tanged spear-heads and flat celts, said to be chiefly of copper. With them are found stone and obsidian implements and flakes, which evidently still remained in use, cup-like vessels cut from the solid marble, and curious stone idols in the form of human figures, already mentioned, some of which assume quite conventional forms, one type resembling a violin: silver occurs in the tombs, but not gold. Pottery was plentiful, but most of it was made without the wheel, and decorated with incised designs, and, at the end of the period, with painted geometrical ornament and spirals, the latter transmitted from Crete. A small series, probably of copper, from Amorgos includes spear-heads with openings in the blades for the ligature of the shaft (fig. 173); and in another primitive group, from Thermia (the ancient Cythnos), are examples of the pierced axe (fig. 174) and flat celts with perforation (*a*), already referred to. The small axe-adze is almost identical with one from Athens; and the type occurs in the sixth city at Hissarlik (Homeric Troy, 1500-1000 B.C.).

The connexion between the islands and mainland is again seen in the double-axes from Naxos and Athens. The large rough casting of a perforated axe-head is reminiscent of Hungarian specimens in Case D, where an axe-adze is also exhibited from Arad.

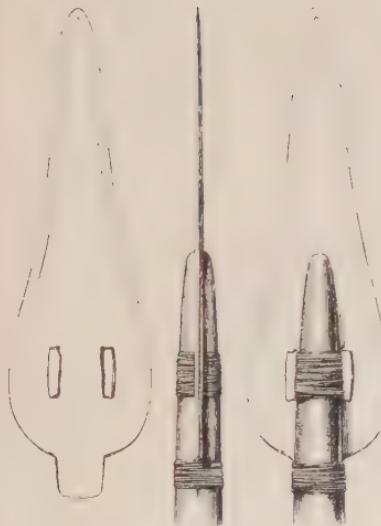


FIG. 173.—Spear-head, Amorgos,  
with method of hafting.  $\frac{1}{3}$

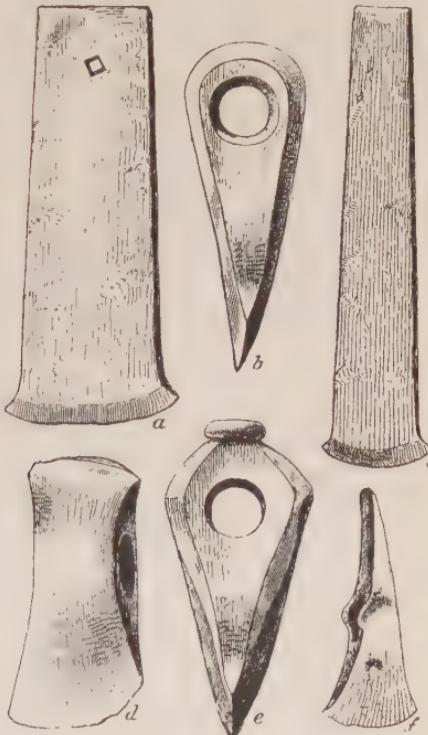


FIG. 174.—Celts and axe-heads,  
Thermia (Cythnos).  $\frac{1}{4}$

#### ASIA MINOR AND CYPRUS: Cases K, J.

At Hissarlik the old conclusions in favour of a Copper stage in the lowest strata have been rendered more uncertain by later work on the Schliemann Collection at Berlin. It would now appear that most of the metal types formerly assigned to the first settlement are equally characteristic of higher strata; and as some confusion of objects found in different levels at the time of excavation was unavoidable, it cannot be confidently stated that they are coeval with the first settlement. It should be noted that in 1893 a bronze pin was discovered apparently with good

claims to a first-settlement origin; while it is now proved that flat celts with a very low percentage of tin and in all respects resembling those of the second settlement have been found in the sixth stratum (the Homeric Troy), which is approximately dated 1500-1000 B.C. Little therefore on this site points to a gradual increase in the percentage of tin in the bronze (p. 6). On the contrary, the analyses of metal objects from the second settlement, which is supposed to have begun about 2500 B.C., reveal a percentage of from 8-11 per cent. of tin, and thus show that the culture of this city was that of a Bronze and not a Copper Age.

The bronze weapons and implements found in the second to the fifth settlements at Hissarlik (about 2500-1500 B.C.) consist

of tanged daggers, long flat celts running almost to a point at the butt, knives, razors, saws, and vessels with handles. Gold and silver vessels and beakers occur, and there is much jewellery in the form of ear-rings, pins, bangles, &c., of the precious metals. Neither the sword nor the brooch was known, and stone axes and axe-hammers were in use throughout. Very characteristic of this early period are small stone (usually marble) idols (fig. 175), sometimes mere pebbles, so highly conventionalized that their real nature is not at first sight obvious: only in comparatively few instances are eyes, nose, and hair roughly indicated by incised marks. Such 'idols' or amulets are also common in the Cyclades, where, however, the figures are often realistic; they occur in Cyprus, and have even been found in Spain. Other

FIG. 175.—Idol of marble, Hissarlik (site of Troy). <sup>3</sup>

examples, more or less conventionally treated, were made of pottery, and perhaps the earliest examples known are from the neolithic settlement at Hagios Onouphrios in Crete, which cannot be later than 3000 B.C. Rude truncated clay female figures from the pile-settlements of Laibach in Carniola are considered to show a relationship with these early amulets of the Aegean, and the same may perhaps be said of others found in the Ukraine (p. 178). It may be noted that the use of the potter's wheel and the covered furnace came in during the second settlement, and therefore presumably before 2000 B.C.; and mention may be incidentally made of the well-known pots on which features and limbs are conventionally modelled, the whole vessels being intended to represent a human figure. Vessels with pierced loops for suspension, jugs, beakers with and without handles, shallow bowls, and pottery imitating animal forms, are among the more



prominent types. The ornament consists of simple incised geometrical patterns which in the first settlements are inlaid with white earth on a black ground; the spiral appears at the close of the second settlement, contemporary pottery being covered with a red slip and mechanically polished.



Fig. 176.—Clay figurine, Adalia, Pamphylia.

From Asia Minor a few specimens may be mentioned that point to international relations in the Bronze Age. The first is a clay figurine (fig. 176) obtained at Adalia in Pamphylia on the south coast, the ware being black throughout and closely resembling the earliest at Hissarlik. It is a squatting female

figure 2 in. high, moulded in the round, with the minor features indicated by incised lines and dots, some of which retain traces of the chalky filling common on the earliest incised pottery of the Mediterranean area. The owl-face is familiar in the Aegean world, and in a certain sense reached Britain (fig. 75), the whole figure possibly belonging to the same cult as the marble and pottery 'idols', which are often more naturalistic than fig. 175. The ware contrasts with the red-faced haemattitic pottery of Cyprus and Syria, and the dotted ornament and linear incisions both occur in the lowest stratum at Hissarlik (before 2500 B.C.).

Two curved knives from Colophon in Ionia, now without their pommels, seem to date about 1300 B.C. One (fig. 177) with ivory plates let into the handle, was found in a tomb with a stout silver

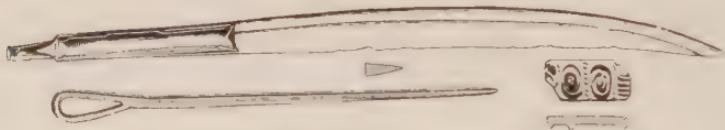


FIG. 177.—Knife, pin, and glass pendant, Colophon, Ionia.  $\frac{1}{2}$



FIG. 178.—Copper dagger, Cyprus.  $\frac{1}{4}$

pin and glass pendant with rude spirals in relief; and a similar knife from Ialyssos, Rhodes, is in the Greek and Roman Department. The type is clearly Mycenaean, and parallels have been found at Hissarlik both in the sixth (Homeric Troy) and seventh settlements (about 1000 B.C.).

In Cyprus there is little or no evidence of neolithic occupation, stone implements being exceedingly rare (*Stone Age Guide*, fig. 129); but on the other hand there are abundant signs of a Copper Age, as in Egypt and Mesopotamia. Whatever the connexion of its name with the metal, the island certainly produced large quantities of copper, the most characteristic early form (fig. 178) being a blade with stout midrib, and tang bent round at the end. This was no doubt used as a dagger, at first without any additional handle; and was exported not only to the adjacent coasts but as far as Central Europe, local specimens being preserved in the museums at Buda-Pesth and Berne. The material used for daggers and flat celts was pure copper or an alloy with very little tin; other forms more usually of bronze include pins, awls, rings, bracelets, and other ornaments, but the

brooch is absent, and spear-heads, if existent, are hardly distinguishable from the daggers.

Antiquities dating before the Mycenaean period (in its restricted sense, p. 159) are found both in settlements and tombs in the eastern half of the island, and usually in the neighbourhood of river valleys. The cemeteries are of great extent, and inhumation was universal, cremation being evidently unknown. Pottery was made on the wheel only at the end of the period, and the ware, either left in the natural colour or converted by firing into red or black, was polished by burnishing; the similarity of technique suggests a comparison with the pre-dynastic Egyptian pottery discovered at Ballas and Nagada, but there is more evident affinity with the early wares of Hissarlik. A black ware with dotted lines, which is found in Cypriote tombs, appears in the middle of the Bronze Age, but probably originated on the coast of Palestine and was imported thence into Cyprus and Egypt from the twelfth to the eighteenth dynasty.

The saw and pin with slit in the shaft are parallel to finds in the second city of Troy (Case K); also the whorls and whetstones from Nicosia, with which are coils of stout metal very like those from Hollingbury Hill (p. 53). The hoe with wings turned over to take the haft is of an Egyptian pattern (Case K) assigned to the sixth dynasty, also represented in South Russia (Case B).

Four analyses made by Dr. Flight show the proportion of copper to tin, other constituents being here omitted:—

1 and 2, daggers as fig. 178, 99.4 and 98.3 per cent. of copper with no trace of tin.

3, knife-blade, 97.2 per cent. copper, trace of tin.

4, blade with rivets, 88.7 per cent. copper, 8.5 tin.

#### SYRIA AND PALESTINE: Cases K, and 3, 4.

The Bronze Age of Syria and Palestine has been dated between 2000 and 1250 B.C., metal having possibly been introduced by Semitic tribes who preceded the Israelites and are known as the Amorites and Canaanites. The non-Semitic Hittites of Asia Minor dominated North Syria from soon after 2000 B.C. and influenced the coast-lands from about 1500 B.C., while Egypt under Thothmes I III exerted pressure from the south. Contact with the civilization of Cyprus was inevitable, and is illustrated by the frequent occurrence of the early Cypriote digger of copper (fig. 178). The earliest local productions were probably of that metal, bronze following later; and objects from the lowest stratum of the mound at Tell-el-Hesy, near Gaza, have proved to contain no tin. Flat copper celts resembling Cypriote specimens have

been found in Bethlehem and its neighbourhood, and two in this Case from Beth-Saur contain 99.5 and 99.9 per cent. of copper respectively, with no trace of tin.

Early in the twelfth century B.C., the Philistines, coming probably from Lycia and entering Palestine from South-west Asia Minor, drove the Israelites out of the coastal region, and after failing in their attempt on Egypt in 1196 B.C., settled there themselves, thanks to the superiority of their European armament (*1 Samuel xvii, 5*). Mr. H. R. Hall has identified a long tapering blade (fig. 179) from Bêt Daghîn, near Gaza, as a Philistine sword of Shardana type, and dated it 1200-1150 B.C. This kind of weapon is well known from representations of the Philistines and their kinsmen the Shardana, who served as mercenaries of the Egyptians. Including the tang which has still ten rivet-holes, the length is 42 in., and on either face is an angular rib down the middle. At the base of the blade are traces of the forked handle, and the weapon seems to mark the transition from the Minoan and Mycenaean rapier (fig. 170) to the cutting-sword. A smaller specimen from Ashdod, Palestine, is 19 $\frac{1}{4}$  in. long; but by way of contrast a sword from North Syria is illustrated (fig. 180), with crescentic pommel (as seen on late Mycenaean and Italian swords of the earliest Iron Age) and deep recesses for the handle-plates. It seems to be related to one about 15 in. long in the Assyrian Department, from Nimrûd, a royal city situated south-east of Nineveh and founded about 1300 B.C. It is perhaps significant that a perforated axe-head was also found there of the same type as that from Silwân (the ancient Siloam), Jerusalem (fig. 181, below): others are exhibited from Malha and Ascalon, Palestine. The upper specimen of fig. 181, from Kefr Malik, near Sinjil, Palestine, has a still narrower blade, but is by no means exceptional. A Syrian type that varies considerably is seen in fig. 182, having oval openings in the blade and an oval socket for the shaft, in the style of Egyptian weapons ascribed to the twelfth dynasty. One has wandered as far afield as Vaphio in the Peloponnese, where the famous gold cups were found, probably of L.M. I date (p. 159) and of Cretan origin.



FIG. 179.—Sword of Shardana type, near Gaza. (L. 42 in.)

It remains to notice a full-sized leaf-shaped sword from Beyrût, that is certainly of European type; and the ornamental lines running parallel to the edges and turning at right angles near the handle may be seen in Case D on a specimen probably from Hungary.

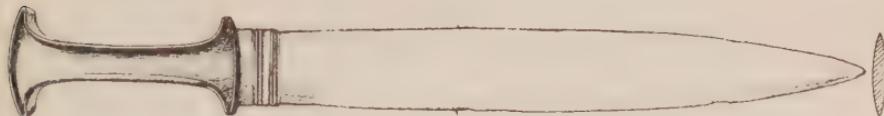


FIG. 180.—Short sword, North Syria.  $\frac{1}{4}$

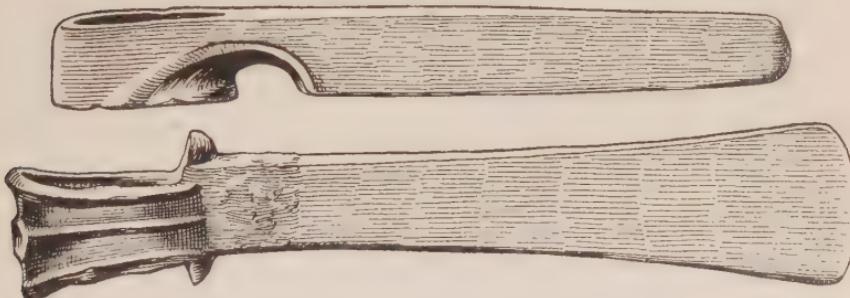


FIG. 181.—Typical axe-heads, Palestine.  $\frac{2}{3}$

#### EGYPT: Case K.

The first metal other than gold employed in the Nile valley was copper, obtained from the mines of Sinai, to which expeditions were made as early as the time of Semerkhat (first dynasty, about 3500 B.C.) and Tcheser (third dynasty); but copper weapons were already known at the close of the pre-dynastic period. During the first three dynasties (about 3500-3000 B.C.), copper was the only metal, but in the fourth dynasty bronze came into use, whether introduced from Babylonia or not it is impossible to say with certainty: in any case the tin was imported. The analyses made by M. Berthelot show that some of the alloys, even in the time of the Ancient Empire, contain as much as 8.2 per cent. of tin, while under the Middle Empire bronze objects contain a proportion exceeding 9 per cent.; indeed, the nature of the alloys used in Egypt seems to have varied very considerably throughout the long period in which bronze was the chief industrial metal. It may be questioned whether the Egyptians were ever absolutely dependent on bronze, for iron

was known to them very nearly, if not quite, as early (p. 2), and was easily obtainable both in Egypt itself, Nubia, and the western slopes of Mount Sinai, where it occurs in haematite and other forms; it is difficult to believe that the people who fashioned objects of haematite at a very early period did not soon discover the useful properties of iron.

Egypt has produced the earliest metal dagger yet known, a copper weapon with two holes for rivets, found at Nagada in a necropolis dating from the period preceding the first dynasty: but the oldest copper daggers from Cyprus and Syria cannot be very much later in date. The rod from Médüm, upon which so much depends (p. 8), was found deep down in the filling of a *mastaba* contemporary with the pyramid of Sneferu, and is held to date from the period of that monarch (about 3000 B.C.). Analysis of a complete section gave 8.4 per cent. of tin, while the inner core contained 9.1 per cent. of tin to 89.8 per cent. of copper, with a little arsenic. This is the earliest piece of bronze known, and it will be noticed that the percentage of tin is comparatively high, higher in fact than that of the axes found at Kahun, a site of the twelfth dynasty (about 2200-2000 B.C.), though not quite equal to that of needles from the same place, which contained 10 per cent. Egyptian implements comprise flat axes of various distinctive forms, socketed celts, battle-axes in the form of segments of a circle with two segmental apertures in the blade, straight daggers, knives, gouges, and numerous small objects. Spear-heads with split sockets apparently come in with the twelfth dynasty, most earlier examples having tangs; and though bronze arrow-heads occur, they seem to be all as late as the New Empire, for the arrow-heads of the earlier period were of flint or hard wood. Bronze swords of undoubted Egyptian origin are extremely rare. Although Egypt was in constant communication with Crete, the Aegean Islands, Greece, and Asia Minor, it developed a bronze industry along its own lines, and neither transmitted nor borrowed forms to any great extent. Examples of the characteristic Cypriote form of copper dagger have been found in Egypt, though they do not seem to have been imitated, and the Egyptian type of battle-axe is found in a modified form in south-western Asia (fig. 182). Specimens of the principal types are exhibited in the Egyptian gallery, where several inscribed objects may be seen, among others the axes with the prenomens of Kames (seventeenth century) and Amenhetep II (1447-1421 B.C.).

Though the Bronze Age of Egypt has yielded specimens of supreme interest, its chronology is of secondary importance for Europe inasmuch as the common types are not represented on the Nile. The flat axes (as fig. 183) correspond in a sense to the earliest celts of Europe, but there are no flanges or stop-ridges, no palstaves or socketed celts and hardly any swords. Evolution

proceeded on peculiar lines, indirect service being rendered to Europe by dating scarabs, pottery, and other special products in Crete.

Flint implements continued to be used in Egypt for a very long period after the introduction of bronze, and some forms of axes occur both in stone and metal, as the Kahun type (twelfth dynasty). Arrow-heads are shown in variety and seem to exhaust the possibilities of flint. Hoes are generally lapped over to take

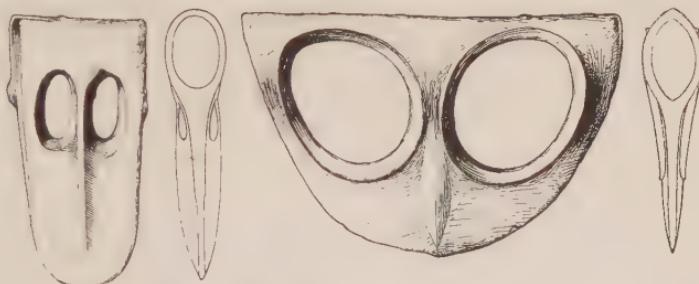


FIG. 182.—Axes with pierced blades, Syria.  $\frac{1}{3}$



FIG. 183.—Copper axe of Nekht, Kurnah, Thebes.  $\frac{1}{5}$

the handle, but two are shown with oval socket more in the European manner (twelfth dynasty, 2200-2000 B.C.).

The main collection being elsewhere, only three illustrations can be given of the exhibits in Case K. A flat copper axe-head with its original haft and thong-binding (fig. 183) came from the tomb of Nekht, superintendent of soldiers under Rameses III (twentieth dynasty), about 1200 B.C., at Kurnah, Thebes; and another with twine binding from Thebes dates from the early eighteenth dynasty (about 1570). A long skate-shaped axe-head still attached to its shaft-head was found at Tell el-Amarna (about 1380 B.C.), and a more crescentic form occurs, probably connected with the Syrian type, about 1700 B.C. (fig. 182). The

missing pommel of Bebiankh's dagger (fig. 184) was doubtless of ivory, like two shown from Dra' Abu'l-Neggah; and the blade is inscribed with hieroglyphs 'Son of the Sun, Bebiankh, to whom life is given'. The dagger was found in a tomb behind Nagada, and dates from the Hyksos period about 1650 B.C. (p. 159).

Prof. Petrie's important find of iron in association with copper

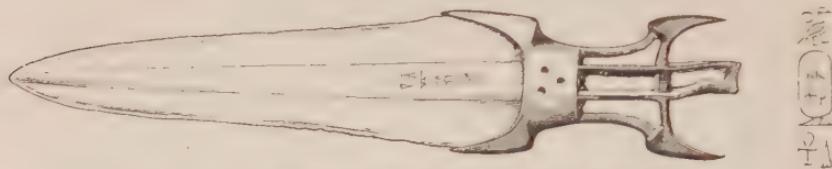


FIG. 184.—Inscribed dagger from tomb at Nagada.

B. 7 in.

H. 6 in.

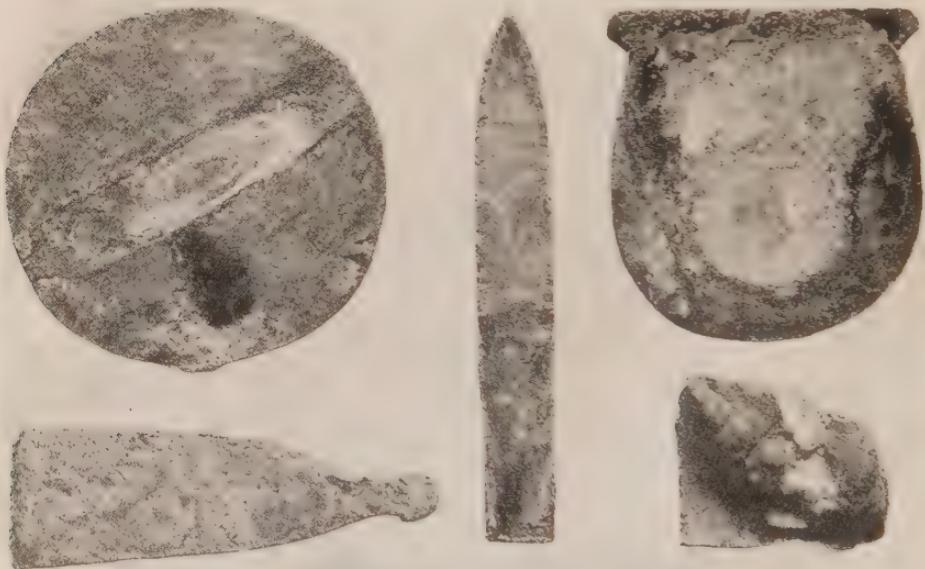


FIG. 185.—Copper mirror, tools and iron lump, Abydos.

tools of the sixth dynasty (about 2700-2500 B.C.) at Abydos is here exhibited (fig. 185). The chisel was found lying on the circular mirror, and there are also an adze-blade and axe-head, all being types intermediate between the fourth and twelfth dynasties. In 1882 Prof. Maspero found iron in the pyramid of a fifth dynasty king at Abusir; and in 1837 a fragment of wrought iron was discovered in a joint of the masonry inside the Great Pyramid

(fourth dynasty). In 1910 Mr. G. A. Wainwright found iron beads in intact predynastic graves (about 4000 B.C.) at El Gerzeh in Middle Egypt. These are sufficient proof that iron was known to the Egyptians long before it came into use in Europe; but its regular use did not begin till about 1200 B.C. and one of the earliest iron weapons is the halbert in this Case of the reign of Rameses III (1204-1172 B.C.).

The most primitive (predynastic) inhabitants of Upper Egypt date from the late neolithic period, when the simple but effective red and black ware (specimens in Cases 49, 50) was produced without the wheel. Egyptian culture remained on the whole Chalcolithic (of the Copper Age) till the end of the Old Kingdom (about 2500 B.C.). Under the early dynasties vessels hollowed out of stone, often of the hardest kind, by means of a copper drill, were much in vogue, but the invention of the potter's wheel, perhaps as early as the third dynasty, 3100-3000 B.C., saved the potting industry, which was also benefited by the use of a closed kiln for firing the ware. The art of glazing pottery had already been discovered, and faience of the eighteenth dynasty so treated is equal to any of later times.

### MESOPOTAMIA : Case B.

The remarkable civilization of Babylonia and Assyria had a non-Semitic basis, the earliest inhabitants of Mesopotamia of which traces remain being called Sumerians (from Sumer, their name for South Babylonia), though Elamites may have preceded them there. The cuneiform script was a Sumerian invention, and the people were already civilized 3000-4000 B.C., using metal and living in great cities. Sumerian culture continued to flourish in Elam (the later Susiana) after Sumer had passed under the Semitic power of Akkad, a little to the north between the rivers. Thus Gudea, *patesi* (hereditary governor and vicegerent of the gods) of Lagash about 2500 B.C. was a Sumerian; but Hammurabi (2123-2080 B.C.) who belonged to the first Babylonian dynasty and codified the Sumerian laws, was a Semite. The following division has been suggested:—

Early Bronze (Early Sumerian), 3500-3000 B.C.

Middle Bronze (Akkadian and later Sumerian), 3000-1800 B.C.

Late Bronze (Kassite, Babylonian, and Early Assyrian),  
1800-1000 B.C.

The life-size heads of lions and panthers, and the lion-headed eagle between two stags (the heraldic emblem of Lagash), discovered by Mr. H. R. Hall at Tell el-'Obeid, show the use of copper on a large scale about 3500 B.C. A vase of Ur-Engur's time (about 2600 B.C.) and the statuette of Gudea (p. 8) are of

copper, and to this date may perhaps be assigned the copper nails with gold heads found at Abu Shahrein (Eridu). Discoveries in graves at Mukayyar and Warka (the Biblical Ur of the Chaldees and Erech respectively) throw further light upon metallurgical knowledge at a period estimated between 2500 and 1000 B.C. The graves contained weapons of stone, copper, and bronze; and in some of the latest, iron appears, but is only used for ornamental purposes: lead and gold also occurred in these tombs, but no silver. At Tell Sifir, north of Muṣayyar, between the Tigris and the Euphrates, a number of copper implements and weapons have been excavated. They include axes and adzes with shaft-holes at one end, semi-circular tools split at the butt, straight daggers with riveted tangs, and curved knives; one of the last on analysis proved to contain no tin. These objects, some of which are in the collection



FIG. 186.—Adze-head, knife, and hoe, Tell Sifir, Mesopotamia.  $\frac{1}{4}$

(fig. 186), are said to have been all found together, but their date is uncertain. That iron was not generally employed much before the year 1000 B.C. may be assumed from the existence of a bronze sword with a cuneiform inscription, giving the name of an Assyrian king (Adad nirāri I) of about 1330-1295 B.C., as well as from the presence of bronze weapons in the ruins of Nimrūd, a city which is supposed to have been founded about 1300 B.C. A limiting date for iron may be inferred from an inscription of Tiglath Pileser I, dating from the close of the twelfth century and mentioning iron as part of the royal spoils from Commagene, in the north of Syria.

The forms of Babylonian and Assyrian weapons and implements are simple, and there is no attempt at decoration. The swords have only one edge, and socketed celts are absent, though the axes with split butts represent a type from which a socketed celt might easily be derived. The hilts of some daggers resemble Egyptian varieties, a similarity which is easily explained by the intercourse existing between the two great oriental monarchies in the time of the eighteenth Egyptian dynasty. Examples of

Mesopotamian bronzes may be seen in the Assyrian Rooms, also the chalcolithic series discovered for the Museum in 1918 by Mr. R. C. Thompson at Abu Shahrein and by Mr. H. R. Hall in 1919 there and at Tell 'Obeid.

The civilization of Elam, east of Chaldaea, has been proved to be of considerable antiquity by the discoveries of M. de Morgan at Susa and elsewhere, but the stratification was not intact, and only approximate dates were obtainable for imported obsidian, flint, ivory, alabaster, bronze, and wheel-made pottery. Seal-cylinders and clay tablets take the art of writing back to an extremely early date ; and the biblical Chedorla'omer, mentioned in connexion with Abraham (*Genesis* xiv) may have represented the power of Elam in the time of Hammurabi (p. 173).

The hoard of gold and copper (or bronze) discovered near Astrabad (south-east of the Caspian) in 1841 shows, in the opinion of Prof. Rostovzev, proof of Sumerian origin about 3000 B.C., or at any rate of strong Sumerian influence ; but elsewhere there are indications of an indigenous culture. Most of the period from the neolithic to the Iron Age seems to be represented in one or other of the three kurgans (extensive mounds of débris) explored by the Pampelly expedition near Anau, between Merv and the Caspian, in 1904. The cultural layers showed interrupted occupation of the mounds, due presumably to periods of drought. Copper implements include daggers, sickles, pins, rings, and buckets ; there was much painted pottery and clay figurines of animals and women as in Mesopotamia. Wheat and barley straw was detected in some of the early ware, and the inhabitants are thought to have practised agriculture before they undertook the domestication of animals. The first two periods find parallels at Susa and other sites in the south, but the third suggests a connexion with the first city of Hissarlik.

#### PERSIA AND CAUCASUS: Case B.

The series presented by Sir Percy Sykes was found at Kákh, Khinámán, South-east Persia, and accompanied burials of unburnt bodies, each grave containing a large pottery vessel and two pins of inferior bronze. The former were about 4 ft. high and  $2\frac{1}{2}$  ft. wide at the middle, and therefore capable of holding a corpse (like that in Case 37), but no traces of the bones were found. The pins, armlets, and knives, were for personal use ; the long thin rods carved at one end were perhaps emblems of office ; one of the bowls with spout may have been a lamp, and the spears and axes were for the use of warriors in the next world. There is an evident relation between the two perforated axes with the lion series in this Case. These constitute an important group

from South-west Asia, the earliest of the series being probably those illustrated from Van and Hamadan (figs. 187, 188), but their date is at present uncertain. The former has a lion on the socket attacked by dogs; and in the other specimen the socket passes through the mouth and forepart of the lion.

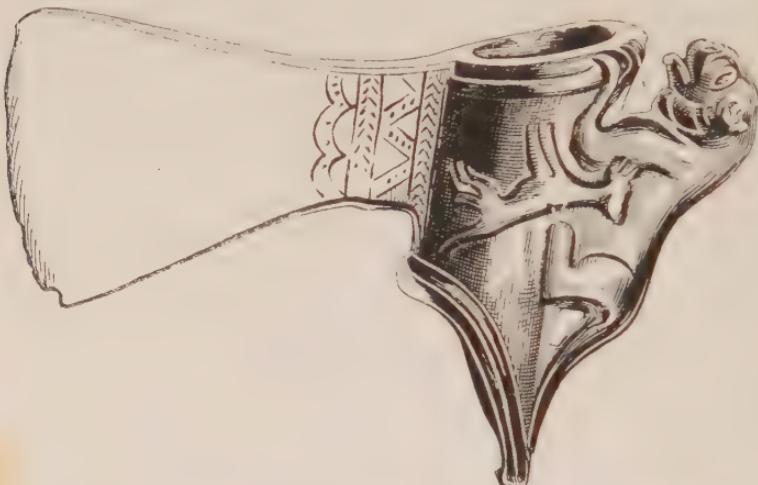


FIG. 187. - Axe-head with lion and dogs, Van, Armenia.  $\frac{3}{5}$



FIG. 188. - Axe-head, Hamadan (Ecbatana), Persia.  $\frac{1}{2}$

The Caucasus was regarded by the ancients as the seat of metallurgical invention. Its fame was partly due to old traditions like the legend of the Argonauts; partly to the ignorance of geographers, who saw in the great range one of the boundaries of the world; partly, again, to the neighbourhood of tribes like the Tibareni, Moschi (the Tubal and Meshech of the Bible) and Chalybes (p. 7), who worked metal and trafficked with it to

foreign countries. But modern research has shown that most of the graves in Caucasian cemeteries must be ascribed to the later and not to the earlier Bronze Age.

Of the sites in Russian Armenia, and on the southern slope of the chain, that at Redkin Lager near Delishan dates from the later Bronze Age, but some have ascribed a comparatively early date to the famous cemetery of Koban upon the northern slope, almost midway between the Black and Caspian Seas. On the other hand, it has been pointed out that although bronze weapons largely preponderate over iron on this site, there is an absence of anything like primitive types. The brooches with a high bow associated more often with iron, but once or twice with bronze implements at Koban, provide us with an approximate date for the close of the Bronze Age in this region. They are of a form common in Greece and Italy, but later than the types from Mycenae and Peschiera (p. 148).

In the district of Lenkoran, on the south-west shore of the Caspian, M. J. de Morgan discovered tombs of an early and late Bronze period, characterized respectively by large cists containing daggers without metal handles, and by small cists in which were found daggers with cast hilts and long sword-blades. Certain types were recognized by Capt. Déchelette as degenerate descendants of the Aegean group, or later derivatives of common ancestral forms: for instance, the crescent at the base of some dagger-blades is considered a reminiscence of the common Italian type (fig. 135), and the sword with pierced tang like fig. 15 is traced to an Aegean prototype. Further, the crescentic pommel (like fig. 180) is linked up with the latest Mycenaean type of dagger.

Mediterranean influence at Koban is indicated by the frequent occurrence of the spiral; a connexion with the south, by the presence of the cowrie (*Cypraea moneta*) of the Persian Gulf, and possibly by the resemblance of certain dagger-hilts to an Assyrian form. A relationship with the lands to the north-east is suggested by the occurrence of pierced axes resembling examples from Siberia; and by the discovery in Russian Armenia of an iron dagger of Siberian type. A connexion with east Central Europe may be inferred from the spiral armlets, penannular collars terminating in spirals, sickles, and socketed celts, recalling respectively the later and earlier periods of the Hungarian Bronze Age. Linking as it does two continents and two seas, the Caucasus naturally assimilated cultural influences from all quarters; and the Tigris and Euphrates, which rise not far from its southern borders, must have facilitated early communication with Mesopotamia and the Persian Gulf.

## RUSSIA AND SIBERIA: Case B.

In his study of the Scythians (1913), Mr. E. H. Minns remarks that 'no satisfactory attempt can yet be made to sum up the prehistoric antiquities of Russia. As compared with Western Europe, the series still has many gaps that will be filled up in due course; we cannot yet tell whether the absence of certain stages be due to their never having existed in Eastern Europe, or to the fact that it is only within the last thirty years that this vast area has been seriously investigated'. At Kiev, the most important neolithic site in South Russia produced spindle-whorls and pottery, and an early mould for casting copper or bronze axes; and intercourse with Europe is shown by the Tripolje culture, named after a village on the Dnieper forty miles below Kiev. This is common to several Russian governments in the south-west, to Galicia, Bukovina, Moravia, Transylvania, and North Moldavia, extending southward through Thrace to Thessaly, and across the Dardanelles to Hissarlik and Yortan on the Caicus. The 'areas' are in circular groups, each consisting of a space five to ten or even seventy-five yards long, and covered with one or more layers of clay lumps mixed with a surprising number of pots. The lumps seem to be the remains of walls and roof, which were elaborately painted and collapsed from time to time; and the pottery and clay figurines have been regarded as analogous to Hissarlik, but it would be premature to deduce any racial connexion.

A Scythian origin has been claimed for the circular mirrors of bronze or white-metal which are found both in China and Siberia and even as far west as Hungary. Pending further discoveries in China, it seems likely that Siberia, from Krasnoiarsk and Minusinsk to the Ural mountains, was the chief Bronze Age area in Asia; and remains are abundant, but have seldom been carefully excavated. The Siberian tombs are rectangular and surrounded by upright slabs of stone, among which are occasionally found rude statues of men and women. On some of these stones and statues are engraved alphabetic characters, as yet undeciphered, which have been compared with the runes of Northern Europe, and similar statues are found as far west as Southern Russia, where they are known as *Kamenniye Babi*, 'old women of stone'. Each grave generally contained several bodies, apparently once covered with wooden slabs or enclosed in stone cists, and above these were bones of animals, especially of horses and sheep; coarse grey pottery, usually broken, and bronze implements were placed with the bodies. The principal classes of bronze antiquities discovered are socketed celts, some with two loops (like fig. 189), straight daggers, knives with a single edge (fig. 190, b), sickles, picks, pierced axe-heads, socketed spear and

arrow-heads, chisels, gouges, pins, bits for horses, circular mirrors, plaques in the shape of reindeer and other animals, probably used as ornaments to leather girdles, and bronze bowls, usually on high feet. The most characteristic ornament represents animals of local species, bears, reindeer, wild goats, &c., the monsters characteristic of the later Iron Age tombs being absent. Sometimes the heads of animals are placed back to back so as to form the guards of daggers (fig. 190, *a*), a disposition which has



FIG. 189.—Socketed celt,  
Kertch, S. Russia.  $\frac{1}{5}$



FIG. 190.—Bronze knives,  
Siberia.  $\frac{1}{8}$

some resemblance to that of daggers represented upon Assyrian monuments. Ancient copper mines are found throughout the region, both in the Altai and Sayansk Mountains and in the Ural range; and the evidence of moulds and crucibles shows that implements were manufactured on the spot.

From the fertile nature of sites selected for settlement, the discovery of irrigation channels, the great number of sickles, and from the comparative rarity of horse harness, it is concluded

that the first metal-using people of the Yenisei were not nomadic but agricultural. The apparent absence of neolithic remains would indicate that these regions were unoccupied before the introduction of metal; but in the Volga and Kama district M. Tallgren has detected a local Stone Age, and pointed out differences between the Ural and Altai cultures. He recognizes a Copper Age in Central Russia contemporary with Koban (p. 177) and divides the Bronze Age in three periods (i) 2000-1500 B.C., contact with Hungary and the south; (ii) 1500-1000 B.C., influences from the south, the Baltic, and Siberia; and (iii) about 1000-400 B.C., the richest and most extensive culture, in which iron plays a part.

A comparison of objects from the transitional cemetery of Ananino on the Kama with remains from Graeco-Scythian tombs in Southern Russia would seem to show that on the European side this Ural-Altaic Bronze culture came to an end about the third century B.C. The absence in early Chinese records of any mention of bronze-using tribes amongst the peoples of Central Asia perhaps points to a similar date for the eastern extremity of the line. Herodotus states that the Massagetae, who occupied a part of the intervening territory, were still using bronze in the sixth century B.C.

#### CHINA, INDIA, ETC. : Case B and 47, 48.

Most of the Chinese bronze implements are of developed, not of primitive, forms. Socketed celts and spear-heads, for instance, can only have been reached after a long period of evolution, but their prototypes are found neither in the Ural-Altaic region itself, where some objects may indeed be simpler in design than others but cannot be described as quite primitive; nor as yet within the limits of China, at any rate not in sufficient number or variety to establish a true descent. Four celts with oblong sockets are exhibited, one bearing an inscription in archaic character. Although the evidence on which their conclusions are based may not stand the test of scientific criticism, the Chinese themselves certainly ascribe a high antiquity to their early bronze weapons. An inscription on the box containing an axe in Case K states that the axe was made under the Chang dynasty (between the years 1766-1122 B.C.), the earlier part of the period to which the so-called classical bronzes are ascribed by native writers. Another axe has an inscription to the effect that it was made in the time of the Chou dynasty; a very similar inscription in the Po Ku Tu mentions Prince P'ing Wang of the same dynasty, and is of the eighth century B.C.; but it is doubtful whether this axe can really be of so early a date.

The socketed spear-head exhibited in Case K, dating, according

to the inscription upon it, from the year 209 A.D., unless made for ceremonial use, would also seem to show that bronze weapons were still made in China much later than they were in Europe. The Siberian knife, often with a loop at the end, seems to be the origin of the Chinese knife-money ; and characteristic of China are the halberts (fig. 191), the mounting of which is illustrated in this Case. Another Chinese type is a short sword cast in one piece (fig. 192) with disk pommel, shaped guard and often disks on the tang, giving the diameter of the grip now missing. An



FIG. 191.—Halbert-blade, China.  $\frac{1}{2}$

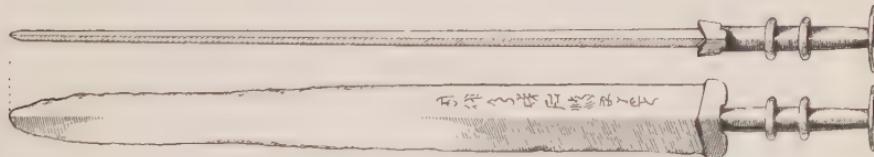
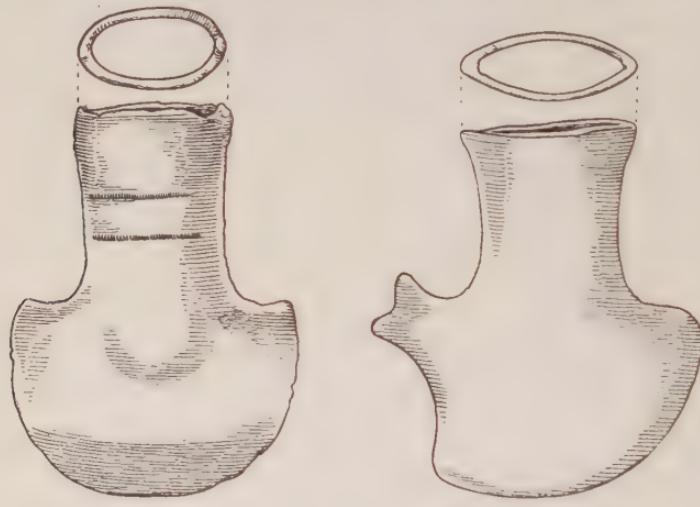


FIG. 192.—Inscribed bronze sword, Shen Si, China. 1

exceptional specimen is the huge socketed spear-head, an ambitious but unsuccessful casting made in the second year of the period Shang Yüan (A.D. 761) and used by Shih Chao-i, who led a rebellion against the Emperor Su Tsung. The Japanese acquired the art of metal-working from China, and when they passed from the mainland into the islands occupied by the stone-using Ainu, were already in their late Bronze Age. The bronze swords discovered more especially in Kyūshū had ceased to be used at the time when the Japanese dolmens were constructed, that is to say, in the period closing about the seventh century A.D.

Bronze implements found in Burma, Java, and Celebes belong to the Southern Chinese and Annamite archaeological province, and

are comparatively rare. Two socketed celts (fig. 193) are exhibited with flattened pointed-oval mouth; that from the Thayetmyo district of Burma having an outline similar to a flat-shouldered celt found in the western part of the Midnapur district, East Bengal, the most easterly discovery of a copper implement in India. The other specimen here illustrated has a forked spur at one side, very like one secured in Yunan by Dr. John Anderson, with 90 per cent. of copper and 10 tin. Fragments of a bronze bowl, with animal forms and spirals projecting from the rim, come with heavy armlets with overlapping ends and small bracelets from Tezpur, Assam, but the date is uncertain. It



Thayetmyo.

Hotha, N. Shan States.

FIG. 193.—Socketed celts, Burma.  $\frac{1}{2}$ 

may be added that a leaf-shaped and socketed spear-head (now at Oxford), resembling those of Western Europe, has been found in a tributary of the Mekong river, North Shan States.

There is little evidence of a Bronze Age in India, but a certain number of specimens point to a Copper Age which may have been immediately followed by that of Iron. It is therefore unwise to apply European standards in this case, and a survey of the finds by Mr. Vincent A. Smith has not resulted in the establishment of any chronological sequence for the copper implements.

The most remarkable discovery was made in 1870 at Gungeria, about forty miles from Boorha, Mhow Taluk, Balaghat, Central India, where more than 400 flat celts (plate x) and a number of thin silver ornaments (fig. 194), some circular, others cut into the outline of the heads of oxen, were found together. Analysis of some of the celts showed that the metal was copper. Doubts have

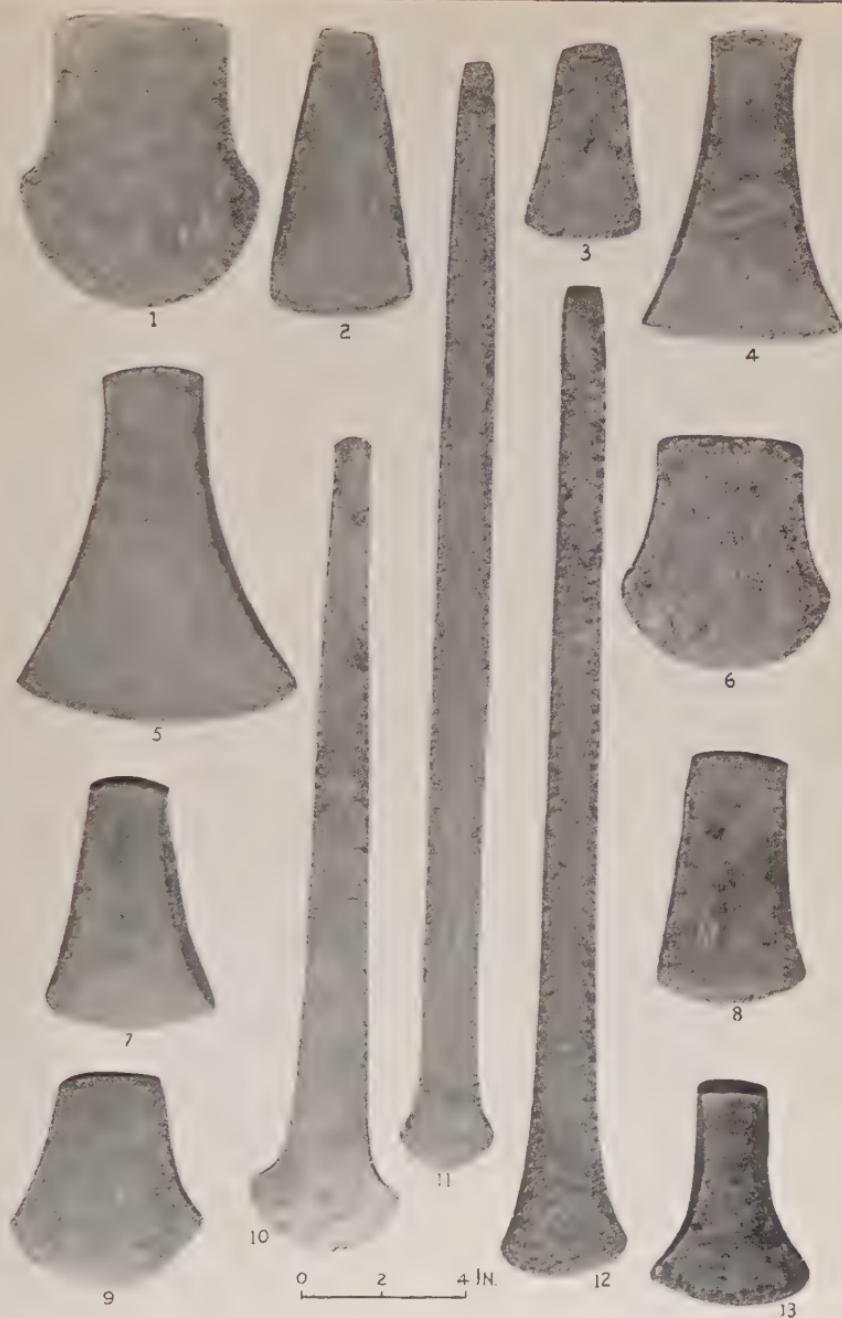


PLATE X. COPPER IMPLEMENTS, GUNGERIA, BALAGHAT, CENTRAL INDIA.  
(Cases 47, 48, see p. 182)



been cast, however, on the extreme antiquity of the Gungeria find, partly because the silver ornaments are not very primitive in appearance, partly because the existence of several distinct forms among the celts suggests previous stages of development. The flat shape (whether broad in imitation of a stone model or elongated in the form of bar-cects) certainly does not prove as much as it would in Europe, for in Asia there is no evolution from the flat type through the winged to the socketed celt. On the other hand, silver has already been met with at a very early time in Spain and the Mediterranean, and some of the earliest Irish celts resemble the Gungeria examples.

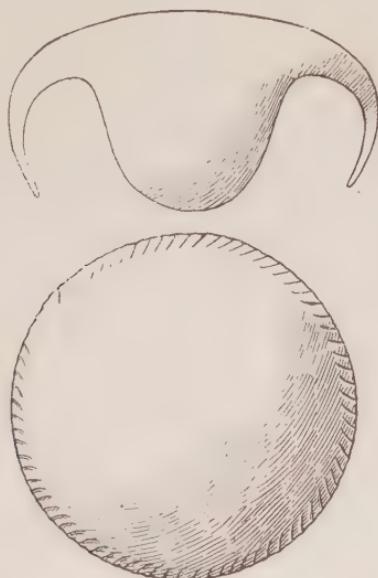


FIG. 194.—Silver ornaments, Gungeria, Balaghat, Central India.  $\frac{1}{3}$

Apart from celts, there are several specimens from India that may be called harpoon-heads, with three or four pairs of barbs. One which is now known to have been brought from India in recent times was found in the Tweed near Norham Castle, and is of bronze containing about 7 per cent. of tin. It is now at Edinburgh, but another (from Niorai, Etawah) at Copenhagen is of pure copper. Similar harpoons have been found at Mathura (on the Jumna above Agra) and elsewhere on or between the Jumna and Ganges: one being accompanied by flat celts and a set of six rings (perhaps ring-money) at Mainpuri.

The weapon selected for illustration (fig. 195) is exceptional in having a hook on one side of the tang, like Sir Walter Elliot's

specimen at Edinburgh, which perhaps came from Fathgarh near the Ganges above Cawnpore, and is  $28\frac{3}{4}$  in. long, containing 95.68 per cent. copper and 3.83 tin. Another, now at Copenhagen, came (like that in Case B) from Niorai, Etawah, on the Jumna below Agra.

The Edinburgh blade has been described as a sword, but a more convincing form of that weapon is exhibited from an unknown



FIG. 195.—Blade with tang, Etawah, N. India.  $\frac{1}{4}$

site in India, with a fish-tail pommel, cast in one piece. The entire length is 30 in., the broad and tapering blade, with rounded central rib, measuring 24 in. Thirteen of this type have been found together at Fathgarh, five of which are now at Calcutta. At present they appear to be peculiar to the northern river-basins where most of the prehistoric finds occur; and future discoveries may determine their precise place in the early metallic age of India, which is at present little understood.

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